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The Major Diseases of Adult Life as a Problem of Preventive Medicine*

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THE subject which you have honoured me with an invitation to bring before your Association this afternoon is such a large one that I shall have to limit my remarks to some of its outstanding features and these I shall consider especially in relation to mortality, morbidity and disability and from my experience as a clinician and the medical referee of a life insurance company.

One need scarcely emphasize before an association of doctors dealing with public health, that mortality and disability from disease do not follow parallel lines.

Mortality itself is clear cut and definite but the same cannot be said of the causes producing it. Mortality statistics vary according to accuracy of diagnosis, care in death certification, the nature of the diseases and other factors. The statistician assigns death to one disease whereas the clinician or practitioner often has difficulty in deciding which of two or more conditions to certify as the primary cause of death. A recent insurance experience may serve to emphasize the difficulty of certification. A man with heart disease, addicted to occasional sprees, became hopelessly intoxicated and shortly after going into the bath room, was found dead in the tub. At autopsy, water was found in his lungs and the coroner's jury brought in a verdict of accidental death by drowning. This death would appear in mortality statistics under the classification of accidental death, without conveying the important additional information that he was drowned because he was intoxicated and that he suffered from heart disease. Moreover, deaths in which the diagnosis of the disease is confirmed by bacteriological, serological or other laboratory procedure, as tuberculosis, typhoid, syphilis etc.; and cases that come to autopsy, will be more accurately reported and classified than obscure and complicated

**Addrees to the Ontario Health Officers' Association, Toronto, June 4th, 1929.*

cases or those indicated by such indefinite terms as senility, old age or heart failure, in which some organic diseases may have been overlooked.

This difficulty of classification is exemplified by the cardio-vascular-renal group of diseases in which, both clinically and at autopsy, evidences of disease are found in the vessels, the heart and the kidneys, and it is impossible to say which was primarily most at fault. In fact, there is usually more or less co-incidental involvement of all three tissues.

We know how frequently in long-drawn-out systemic or degenerative diseases, a terminal pneumonia or other infection, an apoplectic seizure or failing heart, may be the immediate cause of death, but such cases of pneumonia, apoplexy or heart disease are of a different class from those occurring when the systemic condition is otherwise satisfactory. They are not primary causes of death and yet they are often so reported. Mortality statistics therefore often convey an impression of definiteness and accuracy greater than applies to the information upon which they are based.

Statistics since 1900 are much more dependable than those before that time, on account of improved diagnoses, more general and more accurate certification and more uniformity in classification; consequently comparisons of mortality statistics before and after 1900 are often misleading. Diabetes and albuminuria for instance are more frequently and accurately diagnosed since urinalysis and blood examinations have become necessary routine procedures, and the same remark applies to the recognition of abnormal blood pressures since the introduction of the sphygmomanometer, and to gastric ulcer and cancer since the development of X-ray technique. More accurate diagnoses, therefore, undoubtedly explain in some measure the statistical evidence of the increase of certain diseases, such as cancer, diseases of the blood vessels and diabetes.

Comparison of the statistics of 1870 with those of 1925 in the U.S. registration area, indicate a tenfold increase in the death rate from diabetes in the past 55 years, and though it is well known that there has been a marked increase, such statistics give an exaggerated idea of its extent.

While I have indicated some of the shortcomings of mortality statistics, it is not to undervalue their importance, for I believe that fuller, more accurate and comprehensive statistical information on morbidity and disability as well as on mortality, will point the way of future progress in preventive medicine.

When we come to consider the question of disability from disease, we are at once confronted with the lack of satisfactory statistical information. Disability is a much less definite term than mortality; it may be partial or total; transient or permanent; it often depends upon occupation. A degree of deafness that would totally incapacitate

a teacher, or an injury to the hands which would prevent a musician or a mechanic from following his occupation, may be consistent with a life of usefulness in another occupation. Some diseases such as rheumatism and arthritis, with a low immediate mortality, not only produce a great deal of occupational disability but short of this, they are accountable for lessened efficiency and much suffering, and are the commonest cause of heart disease with its great mortality in later years.

It is difficult to define disability satisfactorily. The disability granted by health insurance companies, according to the type of policy and premium charge, may cover the disability from a limited number of specified diseases only, or there may be a general covering with the exclusion of certain specified conditions as venereal disease and alcoholism. Health insurance policies may cover disability from the onset of the illness or only after a waiting period of a week or more according to the type of policy issued. With life insurance companies disability benefits are paid only after a waiting period of from three to six months from the onset of the actual disability. Health insurance contracts are usually from year to year up to 60 years of age whereas life insurance companies issue contracts covering disability for the duration of the policy, provided the onset of the disability is before 60 years of age. Disability developing after 60, a time when actual disability is very frequent, is usually not covered either by health or life insurance policies. On account of the three months waiting period, many diseases of short duration, even those with a high mortality such as pneumonia or typhoid fever, produce few cases of life insurance disability.

In life insurance experience, tuberculosis, especially in young underweights, insanity and nervous diseases are the chief causes of disability, whereas industrial disability is chiefly due to diseases of short duration such as colds, bronchitis or other respiratory trouble. Dr. W. J. Bell* informs me that these account for over half the time lost by Ontario workers, estimated as an average of 7 days yearly. Digestive, nervous and genito-urinary diseases are next in order in their liability to produce sickness disability, and the latter causes five times as much loss of time as disability from accidents.

Enough has been said to show that insurance disability and disability as it occurs in the general population or in industries, are entirely different matters and therefore the disability statistics of insurance companies are of little value for public health purposes.

There is also a lack of satisfactory statistical information with reference to morbidity in the general population as well as in various occupations. This applies especially to minor ailments and to disease in its earliest stages such as colds, tonsillitis, dental infection, growing pains, chorea, goitre and other ailments, which not only produce disability but are the starting point for more serious organic disease. I need only mention the relation of recurrent head colds and throat

*Deputy-Minister of Health, Ontario.

infection to deafness, of oral and tonsillar infections to rheumatism and heart disease, of iodine deficiency and simple adolescent goitre to toxic adenomatous goitre and Grave's disease. There were 302 deaths from goitre in Ontario in 1927 and most of such deaths are preventable by attention to iodine deficiency in food and water, or if goitre in its early stages came under observation and treatment. How are these cases to be prevented or treated before they have assumed the serious toxic form? The necessity for full and reliable statistical information as to the incidence of goitre and its relation to locality, food, water supply, its occurrence in domestic animals, etc., is obvious.

I should like now to consider briefly the question of death rate and expectation of life. It has been emphasized frequently, but the fact is so important that it will bear repetition, that the remarkable lowering of the death rate and the increase of 12 or 15 years in the expectancy of life during the past half century (table I) are due largely to the control of epidemic and communicable diseases with the resultant saving

TABLE I

DEATH RATES PER 1000 POPULATION FOR DIFFERENT COUNTRIES AND PERIODS

Country	Year	Death Rate	Year	Death Rate
Sweden	1751-60	35.67	1925	11.70
England	1860	22.60	1926	11.60
Scotland	1860	22.10	1926	13.00
North Ireland		.....	1926	15.00
United States	1900	17.55	1925	11.82
Canada	1920	12.40	1925	9.70
Quebec	1910	17.89	1925	12.20
Ontario	1900	13.50	1925	10.90
Saskatchewan	....	.....	1925	6.90
Australia	....	.....	1926	9.40
New Zealand	....	.....	1926	8.70
South Africa	....	.....	1926	9.10
France	....	.....	1926	17.50

of life in infancy, childhood, and adult life up to 30 or 40 years of age. With the exception of influenza and pneumonia, the numerically important epidemic and communicable diseases have either disappeared or are so well under control that no corresponding reduction in mortality in the future need be looked for in this direction. What is not so fully recognized, and therefore requires emphasis, is the fact that the death rate in the population above 50 years of age has not been reduced very much and that the expectancy of life at this age period has increased only a year or two (tables 2 and 3) in the past 50 years. The death rate per 1000 of the population in the U.S. Reg. area (1925) ranged from 1.8 at 5 years of age to 13.2 at 55 years and then began to mount rapidly as age advanced until it reached 141 deaths per 1000

among those over 75 years of age or an expectancy of only 7 or 8 years for this age group.

The disproportionately low death rate of some countries or provinces may be explained by a favorable age distribution of the population. In a rapidly growing country or community there is a large influx of younger ages and naturally more children are born. As population stabilizes and still more when there is a large emigration of younger ages, the death rate increases. To maintain a death rate of 10 per

TABLE II

EXPECTATION OF LIFE (MALES) AT AGE 0 FROM CENSUS RETURNS

	Period	Expectation
England	1838–54	39.91 Yrs.
	1871–80	41.35 "
	1881–90	43.66 "
	1891–1900	44.13 "
England (Healthy Districts)	1849–53	48.56 "
	1881–90	51.48 "
	1891–1900	52.87 "
United States	1901	49.24 "
	1910	51.49 "

EXPECTATION OF LIFE

	Age	1871	1911
Great Britain and Wales	0 Yrs.	40.4 Yrs.	51.6 Yrs.
	5 "	49.8 "	57.2 "
	45 "	22.3 "	23.9 "

Death rate dropped from 23.7 to 14.7 per 1000 during period 1871-1911.
"*Statistical abstracts of United Kingdom.*"

1000 over a period of years in a stabilized population would require an average age at death of 100 years.

The term "expectation of life" I believe is frequently misunderstood. It refers to the average number of years lived by the population or a group of the population at a given period and is computed by calculating the average age at death, of the whole population or group thereof. It is therefore an estimation of what is likely to occur in the future based upon past experience and applies to a population or group average and not to the individual. A high mortality in any group will lower the average number of years of life for that group. We therefore have an explanation of the apparent paradox that the expectation of life at 15 years of age is greater than at 0, because the average duration of life in the latter group is decreased by the high mortality of infancy. On the other hand statistics of standard insurance dealing with selected groups of the population, show a higher life expectancy than census returns dealing with the whole population.

In regard to one's chances of living to 100 years, it is interesting

to note that only one in 1000 of those dying in the U.S. Reg. area in 1925 had attained this age, and the proportion was a little less in Ontario in 1927 viz., 1 in 1150. More women than men reach 100 years of age, probably due to their more sheltered lives.

It has often been pointed out that improved sanitary conditions and other preventive measures, by interfering with the ruthless process of natural selection, has produced a less virile population and that the increase in degenerative diseases noted in recent years is thus partly explained. A more important factor, however, is the fact that a larger percentage of the population is now reaching the age period in which degenerative diseases are prone to make their appearance (table 6). Statistics of the Dominion registration area for 1925 show that the median age was 51.68 years, that is the age at which as many die under as above it.

TABLE III

EXPECTATION OF LIFE FROM INSURANCE DATA

	Year	Age 15		Age 50	
British Institute of Actuaries Table	1869	46.13	Yrs.	20.31	Yrs.
British Offices Table (Life Insurance)	1893	47.32	"	20.61	"
American Experience Table	1863	45.50	"	20.91	"
American Men Table (Life Insurance)	1915	50.06	"	21.29	"

It is obvious that more people are dying of the diseases of advanced life because more people are now living to 50 years of age or more, and naturally more die from the degenerative diseases and cancer which are most common during that period. It is evident therefore that the efforts of the medical profession and public health authorities in the future will be more directed toward preventing the onset, in some cases, or retarding it in others, and lessening the mortality from diseases occurring after 45 or 50 years and especially the degenerative diseases of premature old age, cancer and cardio-vascular disease. But no such spectacular success, however, need be anticipated in dealing with these cases as attended the efforts directed against the epidemic and communicable diseases of earlier life. The latter to a certain extent are accidental and therefore preventable, whereas a definite inevitability characterizes the degenerative diseases.

As age advances it is difficult to draw the line between what should be considered the normal ageing processes, as for example the changes in the skin, the bones, the arteries, the lessened functional activity of the muscles and other organs and tissues, and what constitutes disease. Old age certainly is not measured by years alone; some are as young at 80 as others at 50. Hereditary influences are very important. Karl Pearson states that from 50 to 75 per cent of the death rate is determined by heredity and is not subject to control by preventive measures. This statement no doubt is extreme and will not

meet with general acceptance but at least it emphasizes the great importance of heredity. An investigation of longevity by Alexander Graham Bell led to the conclusion that when neither parent lived to eighty years, only 5.3 per cent of the offspring reached eighty years; if one parent lived to eighty, about 10 per cent of the offspring reached 80, but if both parents lived to 80, over 20 per cent of the offspring attained that age.

In a general way it may be said that degenerative or other morbid conditions of the organs or tissues beyond or apart from that ordinarily incident to his years, constitutes disease. The normal tissue changes of old age and the diseases of that period and the causes underlying both require more thorough investigation and differentiation, and I would suggest also a better classification. Thus of the 30 deaths at 100 years or over, in Ontario in 1927, 15 are classified as due to heart, arterial disease and apoplexy and only seven to old age, though it seems reasonable to consider age the most important factor in all of them.

I have mentioned heredity as a factor in longevity and it is one that cannot be controlled unless through eugenic measures influencing the quality of the offspring, though undoubtedly a good environment may help to overcome the handicap of a bad heredity.

While there are normal ageing processes leading to the period when the trap-doors of Mirza's vision are more closely set, this should not be accepted to include the enormous increase in premature deaths beginning around fifty years of age. Not only may the average time of death be deferred by preventive measures but comfort and usefulness may be increased, and this applies more especially to the period between 50 and 70 years of age.

EARLY CAUSES OF LATER DISEASE

In so far as prevention, amelioration or delay is possible, I believe it will be largely through attention to the infections, intoxications, diet deficiencies or excesses, strain and worry, and other conditions of the early and mid-periods of life, for it is in these that premature degenerations and cardio-vascular and other diseases of later life very frequently have their inception. This brings me to the point that, not only from the viewpoint of mortality and disability, but especially in regard to the diseases of later years, more attention must be directed toward the investigation of the causation and the earliest manifestations of disease, especially those of early life.

Often before cases come under the care of the family physician and still more often before they reach the hospitals, irreparable damage has been done and the opportunity for either preventive measures or successful treatment has been lost.

In the past systematic study of disease has centred too much in hospitals, away from the environment in which illness develops, and

when the morbid process has already reached an advanced stage and where there is usually insufficient opportunity of following the case, perhaps over a period of years, to its ultimate outcome. The favourable position of the general practitioner in the investigation and control of disease has not been as fully recognized and exploited as it should be. He knows the family history, the home and school surroundings, the diet, the diseases which are most prevalent in his locality. He is brought in contact with disease in its earlier stages, observes its sequelae and can follow its progress to recovery, disability, or to the initiation of some secondary organic condition. We require more statistical information as to morbidity and its causes, and for this purpose the services of the general practitioner should be utilized as fully as possible.

Sources of Information

A further organization and co-ordination of the medical profession, the public health authorities and various auxiliary bodies, will be required to obtain information regarding morbidity in the population. I believe we may look forward to the time in the not distant future when vital statistics will include not only the time honoured divisions of births, marriages and deaths, but sickness and disability as well. A good deal of statistical material on morbidity is available to begin with, if there existed some central clearing house where it could be received, collated and classified. One might mention such sources as the medical examinations of school children, the medical services of industrial plants and commercial houses, workmen's compensation boards, sickness surveys, reports of health examinations, records of hospitals and asylums, and of such organizations as mental and social hygiene, tuberculosis associations and health and life insurance companies. The activities of bodies such as these might well be co-ordinated and extended, and beyond these, sickness surveys of different professions, occupational groups, children under school age, etc., carried out. Localities where certain diseases are common, as goitre districts, should be investigated, also home surroundings as to ventilation, drainage, water supply, food, etc. This whole matter of morbidity and its relation to environment, as a starting point in a campaign for disease prevention, is one which should appeal to insurance companies, employers of labour and the public generally. The causes of disease are to be sought especially in the environment and in so far as the latter can be improved it will reflect itself favourably on the health of the people. Thirty years ago chlorosis was a common condition in young girls, and now we scarcely ever see a case, and menstrual disorders are notably less common. The disappearance of stays, the more sensible clothing, the active out-of-door life, more active diversions and occupations, and the more wholesome diet of girls of the present generation are reflected in their better health. The best treatment of constipation and the ills associated with it is a diet with abundance

of roughage in the way of fresh fruits, green vegetables, coarse cereals, etc., to supply vitamines, prevent putrefaction and stimulate intestinal activity. In this connection I would like especially to commend the use of apples in place of citrus fruits and mineral oils, to stimulate normal intestinal activity.

New diseases develop as environment changes, as anæmia from benzol poisoning; cancer from tar, X-ray and other radiations, inhalations of fumes and gases, exposure to mineral poisons or dust. Many new conditions associated with modern industries, occupations, dietaries, etc., should be watched as possible causes of new diseases.

An investigation of morbidity and its causes, in the general population, would be a big undertaking, requiring time, effort and a large expenditure but in so far as it would lead to lessened sickness, disability and mortality, it would be a profitable investment. Less expenditure would be required for the care and treatment of advanced and hopeless cases.

So far I have only discussed the major diseases of adult life incidentally and now I would like to deal with some of them a little more at length. The major diseases of adult life vary according to period, locality, climate, occupation and in many other ways. The major diseases in the early history of Canada have either disappeared or are now under control. One need only recall the ravages of scurvy, smallpox, typhus fever, yellow fever and cholera among the Indians, immigrants and early settlers. During Cartier's first winter in Canada, he lost most of his officers and men from scurvy and during the early part of the 17th century, in some years a quarter of the population in certain settlements died from this disease. At a later period epidemics of smallpox wiped out Indian tribes and menaced the settlements. In 1702 a virulent epidemic of smallpox caused 3,000 deaths or a quarter of the population in the City of Quebec alone, and similar epidemics recurred until Jenner's great discovery in 1798, and at intervals since that time when the protection of the population by vaccination has been neglected.

Typhus fever was epidemic in Canada at various periods from 1740 onward, but I shall refer only to the epidemic of 1847 when about 15,000 out of a total of some 90,000 English, Scotch and Irish immigrants died from typhus fever during the voyage or at the quarantine stations and immigrant hospitals after arrival in Canada.

Cholera reached Canada in 1832, leaving its trail of the dead and disabled from Halifax and Quebec to Montreal, Kingston, York, Hamilton, London, St. Thomas, Goderich and Coldwater. Quebec lost over 1/10 of its population; Montreal suffered almost as much and was the scene of riots and the burning of the Parliament buildings by the enraged population. There were serious recurrences of cholera in 1834, and from 1849 to 1854.

I have recalled these scourges of the early years of our history

because I believe every Canadian should be familiar with the trials and hardships endured by the early settlers, and that we may contrast the major diseases of those days with the present and appreciate what has been accomplished in the interval by preventive medicine and public health measures.

The older men in this audience are familiar with the typhoid epidemics of our student days 35 or 40 years ago—the hospital wards in the late summer and autumn crowded with desperately sick patients, 10 to 15 per cent of whom died. Contrast that state of affairs with

TABLE IV

DEATH RATES PER 1000 POPULATION

PROVINCE OF ONTARIO

	1900	1920	1925	U.S. Reg. Area 1925
From all Causes	13.50	14.00	10.90	11.89
Tuberculosis	1.60	.79	.59	.87
Pneumonia	.72	.92	.50	.84
Heart Disease	.65	1.09	1.42	1.85
Bright's Disease	.39	.34	.46	.96
Diseases of Arteries	....	.65	.84	
Apoplexy	....	.48	.53	.86
Cancer	.48	.85	.95	.93

CITY OF TORONTO

	1903	1928
Tuberculosis (City Deaths)	1.735	.405
Acute Communicable Diseases—Total	1.457	.174
Typhoid Fever	.173	.009
Smallpox	.005	
Measles	.027	.024
Scarlet Fever	.466	.01
Whooping Cough	.124	.049
Diphtheria	.662	.082

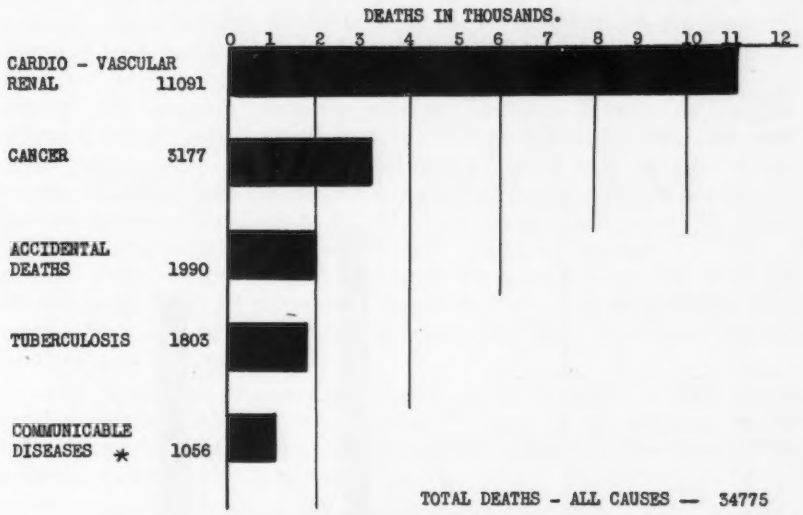
the present when there are not sufficient patients to furnish material for the clinical instruction of students. The death rate from typhoid fever in the province of Ontario in 1900 was 31.3 per 100,000 of the population, and this had fallen to 4.3 in 1925, and in the City of Toronto to 1.6. In the City of Toronto between 1900 and 1925, the deaths from diphtheria per 100,000 of population fell from 86 to 11.5, and scarlet fever from 11 to 2. During the same period the deaths from tuberculosis in Ontario dropped from 160 to 59, and by 1927 there was a further reduction to 56.

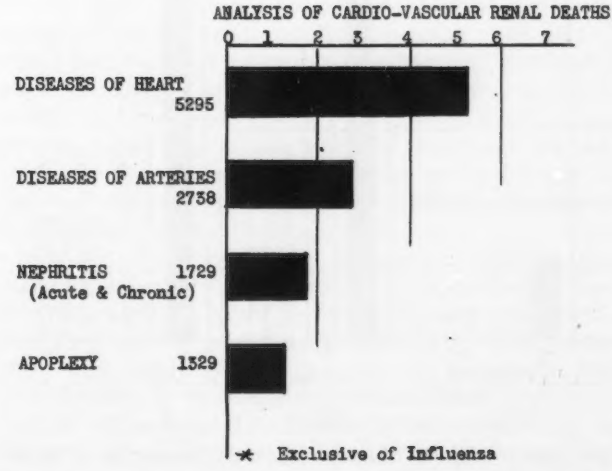
The success of the organized efforts for the control of tuberculosis

is so well known as to require only a brief reference. The death rate from this disease in the province of Ontario has been reduced by two-thirds in the past 25 years and is now less than that from accidents.

V

CHIEF CAUSES OF DEATH - ONTARIO 1927



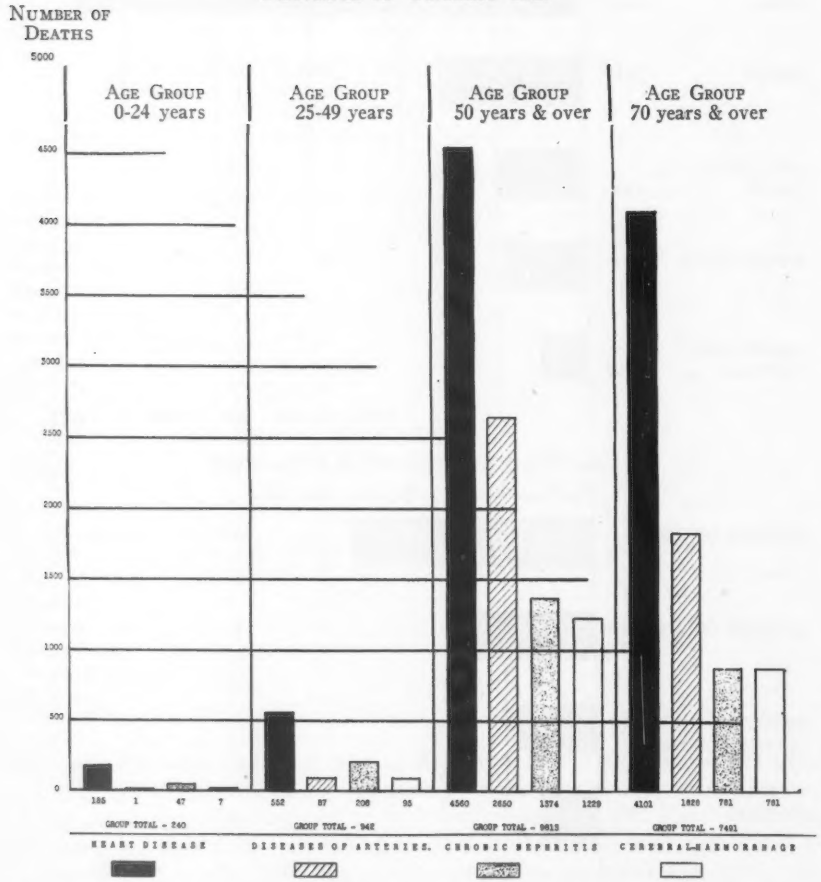


It has been calculated that there are 9 cases of exposure to every death from tuberculosis, so that the great reduction in death rate means a corresponding lessening of the exposure of others to infection

Not only have preventive measures been attended by remarkable success but treatment of the tuberculous as well. The more hopeful outlook regarding the arrest or cure of the diseases is reflected by the attitude of insurance companies. Up to 10 or 15 years ago, a family history of tuberculosis was often sufficient to prevent an applicant

VI

DEATHS ACCORDING TO AGE GROUPS
CERTAIN PRINCIPAL CAUSES
PROVINCE OF ONTARIO 1927



from obtaining insurance and to have suffered from the disease absolutely debarred him. In recent years, insurance companies have been accepting large numbers of favourable cases of arrest or cure on a substantial basis; and after freedom from symptoms for 10 years or more, some cases are being taken as standard risks, and insurance experience on the whole has been very favourable.

While cancer statistics show a steady increase in death rate, this is partly explained by more accurate diagnosis, better reporting and still more by the fact that more people are living to the cancer age. Early diagnosis and treatment by surgery, X-ray and radium are steadily obtaining better results and warrant a more hopeful outlook for the future. While the specific cause of cancer, if there be one, has not yet been discovered, a great deal more is known of contributory causes especially of various forms of irritation—mechanical, chemical and bacterial, and these are to some extent amenable to control. Among cancer-producing irritants one may mention tar, mineral oil, certain parasitic worms, radium, X-ray; mechanical irritation as in lip and mouth cancer; chronic inflammatory conditions as in gastric ulcer, cervical lacerations, mastitis and injuries to the breast. Chimney sweeps' cancer has disappeared but there has been a marked increase in cancer of the mouth, stomach and breast (female). Cancer of the mouth is between 5 and 6 times as frequent in males as females, probably due to the irritation of the mouths of men by smoking. On the other hand 99 per cent of breast cancer occur in females. The notable increase in cancer of the lungs has been attributed to the inhalation of tar-laden dust.

It is important to note that nearly twice as many of the cancer deaths in Ontario in 1927 were under 70 years of age as over, in this respect contrasting with the statistics of the cardio-vascular-renal group, with the excess of death above 70 years.

Pneumonia continues to be probably the most unsatisfactory disease with which the physician and the public health authorities have to deal. Mortality statistics appear to be more favourable on the whole but they vary from year to year. The classification as to bacteriological type; primary, secondary or terminal; lobar or lobular, etc., is difficult, and unsatisfactory for comparative purposes. While some investigations and newer lines of treatment warrant the hope that more effective therapeutic measures are in sight, nothing is yet at the disposal of the medical profession much in advance of our previous all too ineffective remedies.

While a consideration of the age at death leads one to take a less alarming view of the increased mortality from cardio-vascular disease, yet this does not apply to the increasing number of deaths below 60 and 70 years and especially about 50 years. Statistics of heart disease show that the increase is due more to myocardial than to endocardial trouble: that is, the degenerative conditions are increasingly more important than those directly due to infections as in the valvular heart diseases of earlier life. To account for the recent increased mortality from cardio-vascular disease I would suggest the importance of certain causes operative at the present period to a greater extent than at any previous time. First among these there is the effect of the unprecedented strain, shock and worry of the great war and the succeeding

period of reconstruction. The effects of emotional strain are shown also in the increased incidence of toxic goitre and arterial hypertension. Second, the influenza epidemic of 1918-19 and subsequent recrudescences. The deleterious effect of influenza upon the heart is well established, and it is reasonable to suppose that we are experiencing some of the effects of these epidemics in the increased mortality from heart trouble. Third, the prevalence of marked degrees of oral infection associated with the period of mechanical dentistry. We all know that oral infection may produce rheumatism with secondary heart trouble, but apart from rheumatism, chronic oral and tonsillar infections exercise a deleterious effect upon the heart. The outlook therefore should be better for the population that has escaped the effects of the war, who are likely to escape our recent experience with influenza and who are receiving the benefits of better oral prophylaxis and treatment.

If the conditions under which we live were less strenuous and complicated, with more time for rest, relaxation and diversion, with fewer fears and anxieties, the outlook would be even more hopeful.

There are many other well recognized causes of heart and vascular diseases which preventive measures may help to control. By far the most important among these are rheumatism, growing pains, chorea, tonsillitis and dental infections. Syphilis is a common cause and controllable to some extent. Among less frequent causes one may mention obesity, excess of eating and drinking, goitre, chronic intoxication as in constipation; physical and nervous overstrain; deficient exercise and diversion, the too frequent use of headache powders and other poisonous coal tar products; exposure to poisonous gases from furnaces, gas burners, grates, closed motor cars, etc. A consideration of such causes as those enumerated undoubtedly indicates a wide field for preventive measures but in order that these may be carried out successfully early recognition is a prerequisite and this brings one back to the necessity for more information regarding sickness in the population and the environmental conditions under which it develops.

Convalescent Serum in the Prevention of Measles*

WM. WARWICK, M.D.

Medical Health Officer for the St. John District, New Brunswick

IN 1916, Nicolle and Conseil, in Tunis, were the first to use the serum of a convalescent measles patient as a prophylactic measure. Shortly after, other workers confirmed these results and since then the procedure has been applied in various countries, not with the idea of preventing epidemics, but in an attempt to prevent or lessen the severity of an attack in that age group in which measles has its greatest mortality, or, still more strikingly, in the prevention of institutional outbreaks.

Richardson and Jordan, of Providence, in the American Journal of Public Health in June, 1927, reported very fully on the use of convalescent measles serum in that city in the previous year. Some 205 children in two asylums, 62 children in the Providence City Hospital, and 550 children under the care of private physicians were treated with serum after exposure to infection. Their results were reported in great detail, and the general conclusions reached were that 50 to 75 per cent of susceptible children receiving convalescent serum did not develop measles, and, in most instances where the disease did develop, it was much milder in character.

Another interesting report was that of Ruhland and Silverman, Syracuse, of the epidemic of 1926-27 in that city, when 155 patients received convalescent serum, of whom 48 per cent developed modified measles and 52 per cent did not show any manifestations of the disease. There were no deaths in this series.

These examples serve to show that there is a very considerable value in the use of convalescent serum under certain conditions; but one is often inclined, in reading these reports, to feel that the application of such methods is almost impossible in any but very large centres.

Those of you who have previously experienced an epidemic of measles in an infants' home, know only too well what your feelings are when you learn that such children have been exposed to infection, and how readily you would grasp at any procedure that would offer even a moderate lessening in the extent of the catastrophe that is bound to ensue.

Having had an experience of this sort a few years ago, with a 24

Presented at the Eighteenth Annual Meeting, Canadian Public Health Association, Montreal, June, 1929.

per cent mortality rate, you can imagine my feelings when, on the morning of March 12, 1927, I was advised by the attending physician that he had just seen a case of measles in one of the attendants in an infants' home in Saint John, New Brunswick. On investigation, I found that the case was a nurse-maid, on night duty, who had charge of all the 69 children, none of whom were known to have had measles, ranging in age from 3 months to 4 years, in that home, and that she had been in very intimate contact with them on the nights of March 8th, 9th and 10th, while suffering with the usual prodromal symptoms of measles.

I at once solicited the assistance of the Director of Laboratories, obtained permission of the Home management to spend $50.00, if necessary, in obtaining blood, and then started a hunt for donors. Luckily, three young women were found who were rather intrigued by the suggestion of saving a number of lives, and, at the same time, receiving at least a week's income for so doing. These donors had had measles 3 to 5 and 6 weeks previously.

To make a long story short, exactly twenty-four hours after the diagnosis of measles had been made, the inoculation of the children began. 50 were done at that time, and the balance on the following morning, making the time 4½ and 5½ days after first exposure. The blood serum was not pooled.

Accepting Richardson and Jordan's advice that 6 cc. of serum was not sufficient, 10 cc. was given to all but 12 of the older children, and these were given 6 to 7cc. only because of shortage of supply.

On March 15, seven days after first exposure, two children had temperatures of about 101 degrees, with slightly watery eyes; temperatures were normal in 12 hours.

Three children on 8th, 9th and 10th days respectively after first exposure, developed slight serous discharge from one ear, but this quickly cleared up.

On the 10th and 11th days after first exposure, five children showed mild symptoms, such as slightly swollen eyes, slight cough and slight atypical rash, but temperature normal in all cases. These were the only children in whom one felt justified in making a diagnosis of modified measles.

Just to prove that there was no mistake in diagnosis of the original case, another attendant, who had never had the disease, developed typical measles in about 14 days, and although the management had been warned that this girl was to be removed from contact with the children, such was not done, with the result that about 20 of these children, between 3 and 4 years of age, were again exposed, but with no untoward results.

The matron, having had experience with the use of horse serum on other occasions, was particularly pleased at the entire absence of

reactions, local or general; and, as she expressed it: "Not one of the babies missed a bottle."

We all felt that the expenditure of $55 and a little extra labour was well justified by the results, and, I think, we convinced the Home management that there was much to be gained by prompt co-operation with the Department of Health.

In the spring of this year, 10 patients in the Children's Ward of the General Public Hospital were exposed to measles on March 13. Three days later, each was given 10 cc. of serum from a patient who had just been discharged after an attack of measles. Subsequently it was learned that 4 of these children had a history of measles previously. Only one of the others showed any symptoms—slight rash without temperature or cough on the 14th day.

In this instance too, a nurse, on duty in this ward when the original case occurred, came down with a well pronounced attack of the disease in the usual time.

In regard to the use of convalescent serum, it seems to be the consensus of opinion that, if given within 4 days after infection, the disease is prevented in a considerable majority of cases; if within 5 or 6 days, measles will either be prevented or the attack greatly modified; if 7 or more days have elapsed, there is practically no protection in the doses mentioned. The immunity is passive and lasts from 3 to 6 weeks.

The advantages of the use of such serum are seen in the protection afforded infants and young and debilitated children and the stopping of the spread of institutional outbreaks. In those cases where measles does develop, the attack is generally mild, and this attack, of course, gives lasting immunity, a much to be desired result.

The disadvantages are:—possible lack of potency of the serum and difficulty in finding donors or the money to pay them. The preparation of the serum is not a difficult matter, especially if there is a laboratory or hospital available. If, at the beginning of an epidemic, preparations were made for a supply of such serum, many of these apparent disadvantages would disappear.

That convalescent measles serum has a very definite value, under certain conditions, is well known to all, but possibly it has not been used outside of the large cities to the same extent that it might have ceen.

In the hope that those who have not alredy done so may be induced to give it a trial, when the next measles epidemic appears, lies my reason for bringing this matter to your attention.

Cancer and Tuberculosis

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IS there an antagonism between cancer and tuberculosis? Or, are the conditions favouring one antagonistic to the other? In considering the question of a possible antagonism between the two diseases, it seems fair, in the light of possible usefulness in the study of the cause of cancer and inasmuch as no avenue of inquiry should be closed, to call attention to every pertinent observation and consideration which shows a contrast between them.

During nine years as Medical Superintendent of the Indians on Manitoulin Island, Ontario, the great amount of tuberculosis amongst them was very evident; in marked contrast, however, was the apparent absence of malignant tumors. While on the staff of the Vancouver General Hospital, a careful personal record was kept of all autopsies. Over a period of many years only one case of definite tuberculosis and cancer in the same individual was recorded. This case showed a marked healed pulmonary tuberculous lesion, and a quiescent gastric carcinoma. The man died from cardio-vascular-renal affections.

For many years one has pondered over this and there have come to mind numerous points indicative of a tendency for the two maladies not to exist together—perhaps being antagonistic to one another. It may be profitable, therefore, to outline the development of this idea, as, on public health officials falls the duty of gathering information that may be of use to research workers on the problem of cancer.

Physiological Considerations

Many claims have been made regarding diet (fish, meat, etc.) as a causative factor in cancer and in this connection one has thought of the following considerations: It is noticeable that tuberculosis is common in herbivorous animals, and rarely is recorded as occurring amongst strictly carnivorous animals. In contrast, there are few records of the occurrence of cancer in herbivora, but many such in carnivora. Man is both herbivorous and carnivorous, and suffers from both tuberculosis and cancer, but rarely do both affections occur in the same individual, and still more rarely at the same time.*

Free hydrochloric acid in gastric juice is an important factor in the digestion of protein. Carnivorous animals (*e.g.* dog) have a relatively high percentage of free hydrochloric acid in the gastric contents. The

**A very extended statistical study in reference to this has been made lately by Professor Raymond Pearl of the Johns Hopkins University, to which reference is made later.*

diminution of free hydrochloric acid in cases of gastric carcinoma has been observed for many years. More recently attention has been called to a similar tendency of hypochlorhydria in those suffering from cancer in other parts of the body. Hyperchlorhydria is frequently found in association with ulcer of the stomach, but the association of gastric ulcer with carcinoma is found infrequently. It was thought, however, from observation of the frequency with which cancer development is associated with a well nourished body, and the frequent association of tuberculosis with the poorly nourished (either *post hoc* or *propter hoc*) that the hypochlorhydria more probably precedes the onset of cancer, than is it a result.

Physiologists have studied the association of hydrochloric acid production in the gastric juices with the pH or acid-base balance of the blood. Whether the acid-base balance of the blood is likely to be different in cases of tuberculosis from what it is in cancer, is a question that is suggested. There appears to be some clinical evidence that it is. Recent blood chemico-physical studies of these conditions have pointed to the ionization of the blood as a possible factor for consideration. In 1927, R. Reding,[1] writing on pre-cancerous states, called attention to the acid-base and ionic equilibrium of the blood. He claims that if the blood has a tendency towards alkalinity, cancer is more liable to develop; but if, on the contrary, the blood tends towards increased acidity, there is a greater resistance to cancer. The physico-chemical studies of A. de Coulon Sweitz[2] support this contention. Reding claims that radium, especially the gamma ray, prevents an increase of alkali in the blood, and in this manner inhibits cancer. Freund and Kaminer hold that normal serum is toxic for cancer cells, and they claim to have isolated from normal blood a saturated dicarboxylic acid which is lytic for cancer cells.

In regard to the influence of vitamins, it has been claimed by Burrows that vitamin A is negative in reaction and causes growth inhibition; it likely then acts only in a weakly acid medium; but that vitamin B is positive in reaction, is a growth promoter, and likely acts only in a weakly alkaline medium. The question then is suggested, does vitamin B stimulate the growth of certain cells? Might it be, under favourable conditions, a factor in stimulating cancer cell growth?*

Pernicious Anemia and Cancer

The occurrence of cases with a clinical diagnosis of pernicious anemia but which revealed at autopsy cancer of the liver, or elsewhere, brought to mind the similarities of the disturbance of gastric secretion in both of these conditions. It would seem advisable, therefore, to bring into consideration cases of pernicious anemia when studying the vital statistics of cancer. Neuberg[3] has drawn attention to this in an

**Authorities might be quoted, contrary to certain of these claims.*

article, "Constitutional Relationships between Pernicious Anaemia and Carcinoma."

Considerations in the Field of Pathology

In the field of bacteriology and pathology, it is of interest, if not of significance, to note in regard to tubercle bacilli: that mononuclear cells of endothelial origin, about which lymphatic cells will develop, show positive chemotaxis, but polymorphonuclear cells are not attracted, showing negative chemotaxis; that polymorphonuclears play a part at first in an attempt to dispose of the bacilli, as observed in tuberculosis of a serous cavity, but fail; and that in tuberculosis there is a relative increase in mononuclears. Opie obtained two proteolytic ferments in the cells of exudates, one from the polymorphonuclear cells, which is active in weakly alkaline media, and the other, in exudates of large numbers of mononuclear cells, which is active in weakly acid media. In tuberculosis, therefore, there is a tendency to a slight increase in acidity which is again in contra-distinction to the conditions found in cancer, where according to the observations of Reding there is a decreased acidity. The Bacillus tuberculosis is acid-fast—it contains a lipoid and the macrophage contains a lipase. The leucocyte cannot digest the Bacillus tuberculosis, but carries it to the lymph node for digestion by the macrophage. Tuberculosis may be thus disseminated by a defensive mechanism, in the presence of a weakly acid medium, which would appear to be unfavourable to cancer.

Smoke as a Possible Factor

There is a variety of observations, experimental and otherwise, bearing on smoke and tar as causative factors of cancer. A few of interest are mentioned here. Carrel, after producing benign teratoid tumors in chickens, found that injection of tar intravenously changed the benign teratoma into an extremely malignant, transplantable sarcoma. Others report the production of carcinoma in the lungs following continued tar irritation of the skin, without apparent skin changes. C. G. Green[4] in 1914, in his publication "The Cancer Problem in France—Local Incidence of Cancer in Relation to Coal", stated that there was from four to five times the incidence of cancer in the coal burning area, as compared with the rest of France. He associated the sulphur-dioxide in smoke from burning coal, with cancer incidence, and applied his inferences to areas of London, giving the Strand eight times the cancer incidence of Stepney. James Myers, N.Y., writes of a survey on Staten Island in which smoke, topography and population were correlated with the cancer incidence. In his conclusions he states as follows:

"There may be an etiological relationship between the combustion products of coal and oil, and cancer. Those sections of Staten Island exposed to smoke fumes and gases show a

higher cancer death rate than those not so exposed. House heating and chimney ventilation are also important, as gases and fumes from these sources may bear a relationship to cancer incidence as found in our districts.

"The better combustion of fuels in industry and homes, or the absorption of gases, smoke, and fumes to avoid atmospheric or room contamination may mean less cancer.

"Whatever may be the possible errors in this study of a comparatively small number of cases (515) it cannot fail to show, even on one island 13½ by 7¾ miles, divided into 13 districts, variations in cancer death rates, and these variations would seem, in the light of our findings, to bear a relationship to fuel and topography as etiological factors. These conditions, therefore would seem to be a part of the complex etiology of cancer."

Dr. White of Pittsburg calls attention to the smokiness of that city, and points to the extremely low death rate from tuberculosis compared with that of other large cities of the United States. Pittsburg has however, in contrast, a high incidence of cancer.

The Influence of Endocrine Glands

In regard to possible influence of endocrine glands, it may be pointed out that the United States Public Health Service has called attention to the high incidence of goitre in the Great Lakes district and the northern Pacific coast. High cancer rates in the same areas are coincident, if not significant. Reding notes the possible association of the influence of parathyroid glands on calcium metabolism and gives consideration to this in his claim for a chemico-physical relationship of cancer with the alkaline elements in the blood.

STATISTICAL FINDINGS

Vital Statistics

There is certain statistical evidence of importance. Dr. Scher-eschewsky of the United States Public Health Service, in a masterly analysis of the statistics of the registration area in the United States, conclusively proves that cancer is increasing, in fact, at a rapid rate—an increase of 30 per cent in 21 years in 10 states. Louis I. Dublin[5], Statistician of the Metropolitan Life Insurance Company, also says that the increase cannot be explained on the score of improved diagnosis, or on the changing age and race constitution of the populations. He shows that the cancer increase amongst their millions of policyholders, in males and females together, has been 34.37 per cent in 14 years, and that during the same time there has been a 35.6 per cent decrease in deaths from tuberculosis. Hoffman[6] shows that the deaths from cancer between 1906 and 1927 had increased in 23 United States cities all the way from 40 to 200 per 100,000 population—averaging from 74.5 to 115.6 per 100,000, New York City rising from 72 in 1906 to 125 in 1927, in spite of the number of cures of early cases. He states also, "There seems to be a fair amount of evidence to support the conclusion that cancer and over nutrition go generally together." Cherry, for

England Wales from 1876 to 1910, puts the percentage *decline* in pulmonary tuberculosis mortality at from 8 to 10.6 per cent in five year periods—averaging about 9.3 per cent, with an *increase* in cancer mortality from 8.3 to 15.3 per cent in five year periods—an average in the neighbourhood of 11.3 per cent. Attention may be directed to the vital statistics charts for Vancouver of Dr. F. T. Underhill, Medical Officer of Health for Vancouver, B.C. These show that, as the tuberculosis death rate has rapidly declined, the cancer death rate has increased at an almost equal ratio. Vital Statistics for Canada show an increase of 18.3 per cent from 1921 to 1924 in the cancer death rate.

The following comparison of certain features of cancer and tuberculosis is taken from Professor Pearl's[7] article referred to below:

	TUBERCULOSIS	CANCER
A.	Sex. Higher in males.	Higher in females.
B.	Age. Higher in early life.	Higher in late life.
C.	Race. Higher in colored than in whites.	Higher in whites than in colored.
D.	Trend—*downward*—	—*upward*—
	1900—166.7 per 100,000	1900—60.7 per 100,000
	1910—132.5 per 100,000	1910—77.3 per 100,000
	1920— 92.2 per 100,000	1920—87.8 per 100,000
	45 per cent decrease in 20 years	*45 per cent increase in 20 years*
E.	Urban decrease faster than rural.	Urban increase faster than rural.
F.	In localities and races where T.B. trend is down, the cancer trend is up.	Vice versa.

Dublin[8] also states that the cancer deaths in males, maximum at age of 65, were 50 per cent higher in 1924 than in 1910, and that tuberculosis deaths in males, maximum at age of 37, showed a decline of 50 per cent in the same period. From 1910 to 1924, the chances of a boy of 10 years, dying of cancer, had increased by 47.3 per cent, and of a girl, by 21.4 per cent.

Autopsy Statistics

Reference has already been made to our experience in the Vancouver General Hospital as to the infrequency of the association of cancer and tuberculosis. Professor Raymond Pearl in his study published this year records the incidence of *tuberculosis* found in 816 autopsies of cases dying of malignant neoplasms and in 816 autopsies of cases of similar age, sex and race, but showing no cancerous or other malignant tumours. He also records the incidence of *cancer* found in 886 autopsies of tuberculosis cases and in 886 autopsies of case of similar age, sex, and race, dying from causes other than tuberculosis. Dr. Pearl's analysis shows that tuberculous lesions were found in the

control cases, two and a half times as frequently as in the cancer cases. Confining consideration to active lesions of tuberculosis, the ratio was five times as frequent in the non-cancer as in the cancer cases. With florid tuberculosis only, the ratio was eight times in the non-cancer controls, to one in the cancer group. The tuberculous lesions only are thus grouped as healed, active and florid. The inquiry is suggested as to whether, if the malignant tumors were so divided, the difference would not be still greater, because, as Osler and many others have noted cancer sometimes becomes quiescent or recessive. This permits of the following considerations: The cancer may have been active but minor or incipient, with other coincident disease, not likely tuberculosis, as the cause of death; cancer may have been contributory to the cause of death, but one factor only, where but for the presence of some other condition, death might not have occurred; the cancer may have been active, then quiescent, and tuberculosis or other condition ensue; the cancer may have been recessive, with tuberculosis or other condition the real cause of death. Allowance for these various degrees of importance of the malignancy would likely give ratios of even more significance. In the 886 autopsies of cases of florid tuberculosis, the analysis showed 1.2 per cent with malignant growths, while in the 886 autopsies of cases otherwise comparable but with no florid tuberculosis 9.3 per cent showed malignancy, none of which occurred in females. These percentages give a ratio of cancer in non-tuberculous cases eight times its incidence in cases of florid tuberculosis.

From the summary of these findings we note: Active tuberculous lesions were found at autopsy 2½ times as frequently in 816 non-cancer controls, as in 816 cases of cancer; in cases showing healed tuberculosis, the ratio was 1 to 1. In 886 autopsies showing florid tuberculosis, there was one with cancer, as compared to 8 (all males) in 886 non-tuberculous controls. "Only rarely does an active and considerable tuberculosis exist with a malignant neoplasm in the same individual. . . There appears clearly to be a significant antagonism between these two pathological phenomena, which disappears when and if the tuberculous process retrogresses or heals, particularly by the fibrotic route. . . The autopsy evidence is so cogent. . .that it leads to the conviction, that the conclusion reached must be a biological reality, a hitherto unanalyzed internal regulatory process of the human organism."

Canadian Data

The following data for Canada for 1926[9] supplement the above observations: Total deaths in 1926 were 107,454, of which 7,614 were attributed as due to cancer primarily, and 368 to cancer as a contributory cause, making a total of 7,984 with cancer, of which only 27 showed tuberculosis as contributory;—that is, one in 296 dying of cancer had tuberculosis also. On the other hand 7,929 had tuberculosis

as a primary cause of death, and 745 had tuberculosis as a contributory cause of death, making a total of 8,674 with tuberculosis, of whom only 2 had cancer;—that is one in 4,337 dying of tuberculosis showed cancer also.

One may, therefore, note that, although cancer and tuberculosis were almost equal as causes of death in Canada in 1926, in 7,984 deaths, with cancer recorded as either the primary or a contributory cause, there were only 27 recorded as having tuberculosis as a contributory cause of death, *i.e.*, 1 in 296. Of 99,470 deaths without cancer, either primary or contributory, there were 8,674 deaths which had tuberculosis recorded as primary or contributory cause, *i.e.*, 1 in 11. In other words, where cancer was present, there was only 1 in 296 deaths with associated tuberculosis, whereas in all other recorded causes of death, there was 1 in 11 had assciated tuberculosis—or a ratio of 27 showing tuberculosis without cancer to 1 showing tuberculosis with cancer. Now reversing these figures, and substituting tuberculosis for cancer, we find that among 8,674 cases with tuberculous infection, 2 had cancer as a contributory casue of death, or 1 in 4,337. Of the remaining 98,780 deaths without tuberculosis as a primary or contributory cause of death, there were 7,984 had cancer as a primary or contributory cause, or 1 in 12, or a ratio of 361 deaths showing cancer without tuberculosis, to 1 showing cancer with tuberculosis. These ratios still further accentuate the antagonism between the two maladies. Of course, the ages succumbing most to cancer are not the same as those dying of tuberculosis, but, taken in conjunction with Dr. Pearl's figures, these data are very significant indeed of the apparent antagonism between tuberculosis and cancer.

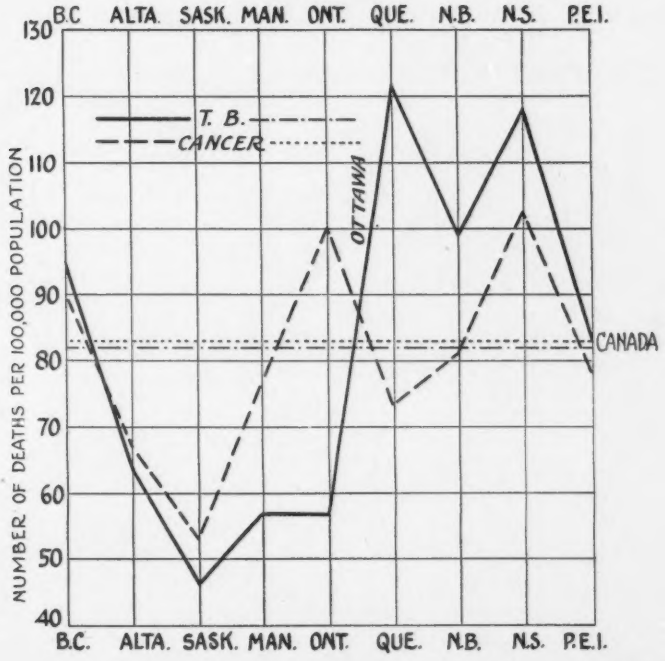
Data of the Canadian provinces[10] show, when analysed, interesting comparisons. Tuberculosis varies from the highest incidence of 121 per 100,000 population in Quebec—to the lowest of 46 per 100,000 in Saskatchewan. Cancer varies from highest of 102 per 100,000 in Nova Scotia—to lowest of 53 per 100,000 in Saskatchewan. To show, however, the relative contrast of tuberculosis to cancer, we find that by taking the incidence of tuberculosis deaths as 100 and that of cancer as 101, for all Canada, this ratio varies from the ratio of tuberculosis as 100, to cancer as 175 in Ontario, to the ratio of tuberculosis as 100 to cancer as 60 in Quebec.

The accompanying charts show at a glance, first, the death rates per 100,000 population by provinces, from west to east, for tuberculosis and cancer; and second, the ratio of cancer in each province, as compared with tuberculosis as 100. This shows the four provinces to the west of Ottawa high in cancer compared with tuberculosis, and the reverse in the four provinces to the east of the Capital—the whole of Canada being as 101 for cancer to 100 for tuberculosis. Of special note, is the high tuberculosis rate in Quebec, and the relatively (to tuberculosis) high cancer rate in Ontario.

(Since the above was written, the preliminary report of Vital Statistics for Canada, 1928, has come to hand. The story is substantially the same. The tuberculosis rate dropped further for Canada from 82 per 100,000 in 1927 to 81 per 100,000 in 1928. Cancer rate went up in every province except Alberta—rising for all Canada from 83 per 100,000 in 1927 to 88 per 100,000 in 1928. On the charts the provinces would hold the same relative positions. In 1928, Ontario's ratio of cancer to tuberculosis rose from 175 to 188 deaths due to cancer, to every 100 deaths from tuberculosis.)

FIG. I

TUBERCULOSIS AND CANCER DEATHS PER 100,000 POPULATION IN CANADA AND IN EACH PROVINCE, 1927.



In 1926 the deaths registered in Canada with tuberculosis as a primary cause included 6 with pernicious anemia as contributory cause, whereas those with cancer as primary cause had 10 with pernicious anemia as contributory. That is, the relative importance of pernicious anemia, registered as a contributory cause of death where tuberculosis is primary, is to pernicious anemia, as a contributory cause when cancer is primary, as 6 is to 10. And in other anemias the ratio is about the same, namely 5.6 to 10. Therefore, anemia with tuberculosis compared to anemia with cancer is as 57 to 100.

ADMINISTRATION DUTIES IN REGARD TO CANCER

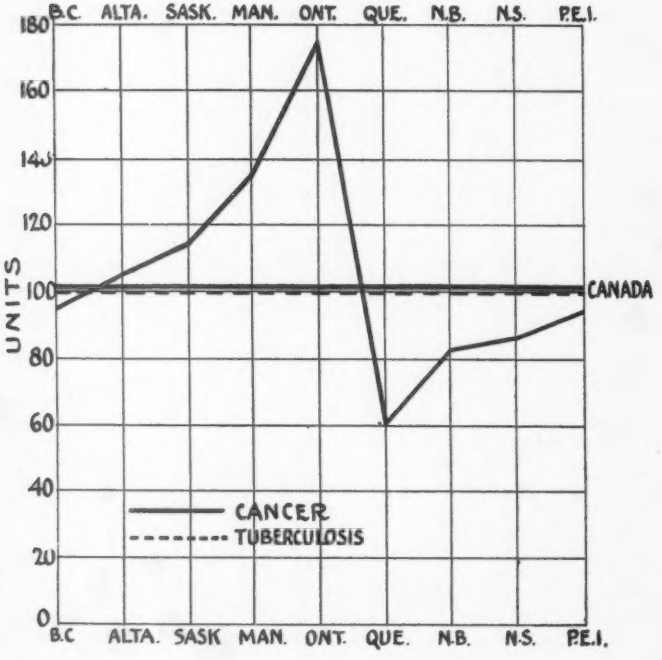
Louis I. Dublin[5] says, "particularly should the attitude of the medical and public health professions, towards this disease, be revised. . .

The efforts. . .made in the past ten years. to deal with cancer. . .are relatively puny." Elsewhere, an effort will be made to outline this aspect; here it is sufficient to mention it briefly: One great need is for statistics. These might be obtained by:

(*a*) Publicity campaigns amongst the medical profession and the laity, with a view to cancer reporting and cancer clinics for diagnosis and treatment.

FIG. II

RATIO OF CANCER DEATHS TO EACH 100 DEATHS FROM TUBERCULOSIS IN CANADA AND IN EACH PROVINCE.



Tuberculosis	*100*
Cancer—Canada	*101*
Que.	*60*
N.B.	*82*
N.S.	*86*
P.E.I.	*94*
B.C.	*95*
Alta.	*105*
Sask.	*115*
Man.	*135*
Ont.	*175*

(*b*) Work with and through insurance companies, by repeated examinations, and education amongst policy-holders.

(*c*) Cancer surveys, as made in conjunction with voluntary reporting by the medical profession of Newton, Mass., and that made on Staten Island in regard to industries, smokiness and topography.

Treatment Suggestions

This apparent antagonism has already afforded a basis for experimental work with a view to the treatment of cancer. This, so well reviewed by Dr. Pearl, is summarized:

Centanni and Rezzesi in animal experiments injected a mixture of cancer cells and tubercle bacilli into mice, resulting in no tumor. Simultaneous injection depressed the rate of growth of tumor; previous infection of the animal with tuberculosis delayed the development of the subsequently inoculated tumor. The injection of living bacilli in a growing tumor partially destroyed it; injecting dead tuberculosis bacilli into a growing tumor had no influence in checking its growth; tuberculin mixed with tumor emulsion retarded or inhibited its growth.

McCaskey suggested trying tuberculin injected locally into the tumor, in selected inoperable cases of cancer in man.

In 1916, Dr. William M. Dabney treated seven cases of inoperable cancer with tuberculin. Two of these showed an entirely unexpected improvement, sustained under observation for three months. The work was discontinued owing to circumstances over which he had no control.

Drs. Sutton and Pearl at Baltimore, commencing July 10, 1928, found tumors treated with tuberculin, showing "definite retrogression", with general condition encouraging, but felt it was too early to make any claims.

Their further observations will be looked forward to with great interest.

In conclusion—For several years, efforts have been made to arouse an interest in the need for public health activity in regard to cancer; these will be continued. Dublin says, "What are intelligent laymen, physicians and surgeons going to do about the huge cancer hazard which confronts the average citizen today?" In this query, I would like to specifically mention public health officials.

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The Venereal Diseases Prevention Act of Ontario*

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THE Venereal Diseases Prevention Act is embodied in Chapter 264 of the Revised Statutes of Ontario, 1927. Every practising physician in the Province should make himself familar with the contents of the Act and the Regulations made under authority of the Act, for the reason that they not only impose certain responsibilities on the physician, but they also specify penalties for violation of certain sections of the Act; the most important of these, from the physician's point of view, is the section respecting secrecy, namely section 11.

I propose briefly to discuss the Act under three main sub-divisions: I, as it applies to the public; II, as it applies to the physician; III, as to its provisions for the control of venereal disease.

I. The Act as It Applies to the Public

In studying this phase of the matter we must consider the Act, first, as it applies to the public at large; and, second, as it applies to those of the public who are unfortunate enough to be confined in corrective or other public institutions.

1. *The Public at Large*

The Regulations respecting Venereal Disease (sec. (*c*), ss. 1) definitely provide that every person infected with venereal disease shall forthwith place himself under the care and treatment of a legally qualified medical practitioner, and section 5 of the Act specifically states, "No person other than a legally qualified medical practioner shall attend upon or prescribe for, etc., a person suffering from venereal disease." Penalties are provided both for the infected person who does not comply with the Regulations and for the physician who, not being properly qualified, presumes to treat a case.

The Regulations (sec. (*c*), ss. 1) provide for the medical attendance of an individual who for financial or other reasons, is unable to secure medical treatment, and places responsibility for the treatment of this individual on the medical officer of health of the municipality.

This does not necessarily imply that the medical officer of health shall treat the person personally, but it does imply that he shall, as a

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municipal officer, see that the treatment is provided and at the expense of the municipality.

Section (*c*), ss. 2 of the Regulations, instructs the infected person respecting his social conduct and orders his continuation under treatment until he is pronounced non-infective. This section further provides a penalty for non-compliance.

The Act provides (sec. 7) that if an individual, knowing that he is infected, or having reason to believe that he may be infected with venereal disease, transmits the infection to another person, he shall incur the penalty set out in the section.

It further provides (sec. 3) for compulsory examination of an individual under specific circumstances set out in the section, as follows: When any person suffering from venereal disease reports for treatment to a physician and in the course of consultation specifies the individual who, in his opinion, was the source of the infection, the physician receiving such information shall transmit it to the medical officer of health. The medical officer of health shall then notify the individual so accused and shall order him to report for examination by a legally qualified medical practitioner. The legally qualified medical practitioner making the examination shall furnish a certificate to the medical officer of health (worded according to Form 3 VD of the Regulations) which certificate states specifically the procedure followed in the examination, and the opinion of the medical practitioner based on the examination.

Should the individual not comply with the order to place himself under treatment and to continue under treatment until pronounced non-infective, he may be brought before a magistrate and the penalties provided by the Act invoked in his case, even to the extent of imprisonment.

2. *The Public in Institutions*

The public when under arrest or in custody constitutes a group more easily reached. With respect to these persons the *medical officer of health* is authorized to order physical examination to ascertain whether or not such person is infected with venereal disease. An occasional practice is for a magistrate to make such an order, but nothing in the Act, so far as I am able to ascertain, gives a magistrate such authority; a person so ordered by the *medical officer of health* who refuses to comply may be presented before the magistrate and then be ordered by the magistrate to undergo examination, Authority for this is contained in the Regulations, sec. (*r*). This section of the Regulations, as well as section 2 ss. (2) of the Act, authorizes the detention in custody and treatment of an individual until such time as the *medical officer of health* may be satisfied as to non-infectivity.

In the case of a child under the age of sixteen years infected with venereal disease, the legal responsibility for treatment is placed, first

upon the father; second, upon the mother; and third, upon the person, who for the time being is acting as the custodian of the child.

At this point it should be noted that section 4 of the Act specifically states that every hospital in receipt of government aid in the Province of Ontario, shall make effective provision for the examination and treatment of persons suffering from venereal disease. This section is qualified by the Regulations which provide for the following exceptions —hospitals for the exclusive treatment of children and isolation hospitals.

This section has been subsequently modified by an order-in-council whereby every hospital, prison, reformatory and other public institution under the jurisdiction of the Province of Ontario, excepting isolation hospitals and hospitals for the exclusive treatment of children, shall be deemed a hospital or a place for the acceptance and treatment of any person suffering from venereal disease.

II. THE ACT AS IT APPLIES TO THE PHYSICIAN

In dealing with the subject under the previous heading, we necessarily refer to certain matters in which the physician has a specific interest, such as reporting, examining, preservation of secrecy and treatment.

At the outset it must be definitely understood and appreciated that this Act is in no way intended to interfere with or disturb proper ethical relations as between physician and patient in the event of an infected person applying for treatment to a legally qualified physician, receiving that treatment and continuing under treatment until such physician is satisfied as to non-infectivity. The provisions of this Act need not be invoked as to the type of treatment of such a case, or as to anything else in the conduct of the case, except that the case must be reported.

In connection with the report it should always be remembered that the name of the patient who is voluntarily undergoing treatment must not be divulged. The physician in rendering accounts to a municipality for the treatment of an individual must have those accounts certified only by the medical officer of health. The medical officer of health may accept the statement of the physician that the patient is unable to pay for treatment, or he may require from the physician the name of the patient so as to be able to satisfy himself as to the patient's financial standing. Communication of the name in this connection would be regarded as "privileged" communication, ordered by the medical officer of health, as provided in the Regulations (sec. (*r*). Secrecy in such case would be enjoined on the medical officer of health jointly with the attending physician. The Act (sec. 13, ss. (1) specifically sets out that the treasurer of the municipality shall pay such accounts, after they have been approved by resolution of the local

board of health; but specifically forbids (ss. (3) that such approval shall include the name of the person treated.

For making examination as required under the Act (ss. 2 and 3) or as prescribed by the Regulations, which examination is made on the order of the medical officer of health, a fee of five dollars ($5) is set out as the legal fee, with the exception that in a public institution examination is made by the medical staff of such institution, and without charge.

Strict Secrecy Enjoined by the Act

The Venereal Diseases Prevention Act (ss. 9 and 11) enjoins secrecy on every person employed in the administration of the Act. The Act obliges the physician to report every case. In order to comply with section 11, you must report each case of venereal disease by serial number or other designating mark which identifies the case in your office but does not identify it in any other place. This provision is for the purpose of preventing unnecessary embarrassment to infected individuals and so to promote treatment to the greatest possible extent, and thereby to control spread of the infection.

An exception of the statutory enactment respecting secrecy is provided in section (*t*) of the Regulations, which reads as follows: "Every person employed in the administration of this Act is authorized to communicate any matter coming to his knowledge in connection therewith, when so instructed by the medical officer of health." Neither the Act nor the Regulations are in any way specific in designating the circumstances under which the medical officer of health should instruct any individual to give such information; however, in consideration of the fact that the medical officer of health of the municipality is the only individual authorized to permit such information to be divulged, he must understand that his responsibility in this connection is very considerable and should not lightly issue an order or an instruction for disclosure of information. The circumstances, in his opinion, must seriously warrant and justify the exception to the general instruction contained in the Act.

Report Forms

Every medical practitioner should familiarize himself with the forms used under this particular section. Form 1 VD is the form used to notify the individual to appear for examination. Should he not comply, Form 2 VD is used to authorize a medical practitioner, selected by the medical officer of health, to perform the examination and make the report. Form 3 VD indicates the method of making report to the medical officer of health. Form 4 VD is the instruction issued to the individual, provided that he be found to be suffering from venereal disease and not under treatment.

Form 5 VD is the form used to authorize a medical practitioner to enter a premises forcibly for the purpose of making an examination under authority of this Act. Form 6 VD is the form used for the reporting of a case of venereal disease under treatment by a medical practitioner.

III. PROVISIONS FOR THE CONTROL OF VENEREAL DISEASE

The Act and the Regulations made under authority thereof, provide means for the control of venereal disease and especially for that control by the treatment of infected persons. It should be remarked in passing that treatment of cases of venereal disease is not administered primarily for the purpose of clearing up a case or curing an individual. Treatment, as provided for in the Act, is for the purpose of clearing up a focus of infection as a means of controlling the spread of venereal disease.

Venereal Disease Treatment Centres

Eighteen clinics have been established in the Province of Ontario at various points. Six of this number are located at various hospitals in the City of Toronto. The balance are located as follows:

Hamilton General Hospital
Brantford General Hospital
London, Victoria Hospital
Windsor, Bank of Montreal Building
Ottawa, 180 Canal Street
Owen Sound, 10th St. West
Fort William, McKellar Hospital
St. Catharines, General Hospital
Kingston, General Hospital
Peterboro, City Laboratory
Sault Ste. Marie, City Laboratory
Kitchener, Waterloo Hospital

The establishment of a clinic approved by the Provincial Department of Health is aided by a grant of one thousand dollars ($1,000) for special furnishings, apparatus and necessary alterations to quarters. Five hundred dollars ($500) per annum is voted toward the salary of the social service nurse attached to the clinic and five hundred dollars is granted as a yearly honorarium to the physician in charge of the clinic. The Department is empowered by the Regulations to grant honoraria to assistant physicians in the clinic.

In addition, the Department pays to each clinic established in a hospital for the treatment of out-patients, fifty cents for each treatment for gonorrhoea and fifty cents for each treatment for syphilis. The Regulations stipulate that not more than one treatment per day for a patient will be paid for, and impose certain limitations as to the length of time during which the treatment of any individual case may be charged to the Department.

For in-patients at hospitals in which clinics are established, the Department pays fifty cents per day for each day of treatment up to three months, but does not pay for any patient as an in-patient and an out-patient at the same time.

The Regulations insist that certain treatments, such as prostatic massage, passage of sounds, and deep installation, shall be administered in the clinic by the attending physician.

Further, the Department supplies drugs for the treatment of venereal disease and standard record forms for the clinics. The apparatus, furnishings, quarters and personnel of the clinic shall be subject to the approval of the Department and shall comply with the Regulations. The arrangements and procedure respecting treatment shall also be subject to the approval of the Department. It is further provided in the Regulations that the Department has the right to modify the rules respecting establishment and operation of clinics at any time the same may be deemed advisable.

Treatment in Centres Where Clinics Have Not Been Established

Provisions for treatment where clinics have not been established, are as follows:

1. The treatment of cases unable to pay shall be carried out by legally qualified physicians, under the direction of the medical officer of health.

2. Payment for their services shall be made to these physicians by the local board of health. [The Venereal Diseases Prevention Act (section 15), and The Public Health Act (section 58)].

3. For treatment of cases unable to pay, the Department will supply to physicians for use in their own offices:

(*a*) Literature on the accepted method for the treatment of venereal diseases;

(*b*) Novarsan and sterile distilled water;

(*c*) Mercury salicylate and bismuth hydrate for intramuscular injection.

CONCLUSION

It is the hope of the Department that the practising physicians will use the facilities provided by the Department as fully and as freely as the requirements in their individual practice may demand; that they will assist the Department by

prompt reporting of all cases of venereal disease;

promoting in every way possible the treatment of infected persons, to the end that venereal disease control may have an actual, practical significance in our Province.

The Relative Frequency of Tuberculosis of Bovine-Origin in Europe and America*

By

JAMES MILLER, M.D., F.R.C.P. (EDIN.)

Director, Richardson Laboratory, Queen's University, Kingston

Continued from Last Issue

In the first part of this address published in the November issue of this Journal, Dr. Miller traced, step by step, through the period of 1846 to 1908, the proof of the infectiousness of B. tuberculosis of bovine origin for humans. The opposition to this idea was led by Robert Koch, of whose views Dr. Miller has given a most interesting account. After discussing quotations from Koch's address in 1901 and from one in 1908, where he expressed and re-expressed his opinion that bovine tuberculosis did not constitute a public health problem, Dr. Miller leaves that period with the following paragraph:

"We may leave Robert Koch at this point. He will always occupy one of the chief niches in the temple of fame. His pronouncement of 1901 gave rise to an immense amount of useful work, but had his views been adopted the result would have been a serious set-back to the anti-tuberculosis campaign."

—*Editorial Board.*

We now enter upon another period of research on the relationship of human and bovine tuberculosis in which in various parts of the world investigations were carried out on the lines already laid down. It would take too long to deal with all the various countries. I shall restrict my analysis to England, Scotland, the United States and Canada. I may say this, however, as regards other European countries, Germany shows evidence of about the same amount of bovine infection as England. On the other hand, France occupies a position by herself. With a large amount of tuberculosis amongst her cattle (the average as tested by tuberculin is 16.5 per cent, with a much higher rate amongst the dairy herds of the large cities (Calmette)) there is little evidence of bovine infection in man. A series of 58 cases of gland, bone and skin tuberculosis are reported by E. Burnet without a single case of bovine infection. This relatively low figure is almost certainly due to the fact, first pointed out to me by Sir Arthur News-

**An Address delivered before the Ontario Medical Officers of Health Conference, Toronto, June, 1929.*

holme, that the French housewife on receiving her milk supply brings it to the boil for purposes of preservation.

I shall begin with the United States with some work done by Park and Krumwiede, published in 1910. Park set out to find how much bovine infection there was in the city of New York. He says in his introduction to the paper: "The importance of the question from the human standpoint rests on the percentage of such bovine infection. The control of tuberculosis in cattle is probably necessary anyway, from a purely commercial standpoint. If, however, bovine tuberculosis is a menace, that is, causes an appreciable percentage of tuberculosis in man, the control involves the production of milk and its products free from any possible infectious material. With a milk supply such as that of New York and other cities, which, of average quality, yields tubercle bacilli in 6 to 16 per cent of the samples examined, the changes necessary to render this supply innocuous are far-reaching. The real solution of such a sanitary problem must rest on the incidence of bovine infection in man deduced from the examination of a large series of *non-selected* cases of different types of disease. Further, these cases must be considered from the point of view of disablement or death caused by bovine infection." Park thus attempted to meet Koch's criticism of the work up to 1908 by examining a large series of unselected cases, cases, that is, retaining their proper anatomical distribution and including a large number of examples of pulmonary disease. Further, he set out to determine the percentage of fatal tuberculosis amongst the cases of bovine infection. Moreover, he arranged his cases into groups according to age.

The total number of cases examined by Park and Krumwiede from the hospitals of New York City was 478. The material was obtained from all types of tuberculosis, 296 being pulmonary. In individuals over 16 years of age, totalling 306 cases, only one proved to be an instance of bovine infection. This was a case of genito-urinary tuberculosis. Amongst children 5 to 16 years of age, numbering 54, nine were cases of bovine infection. Of children under five years of age, numbering 91, 25 were bovine infections. Of the fatal cases in children, 10 per cent were due to bovine infection. This gave a total of 36 bovine cases out of 478, a percentage of 7.5. One case showed both types of bacilli present. In no instance was the bovine bacillus found in the lung. Seven and a half per cent of bovine infection could not possibly be regarded as negligible and ten per cent of fatal tubercle due to the bovine bacillus in children disproved Koch's statement that "with few exceptions these bacilli (bovine) are but slightly virulent for man and remain localised."

The amount of bovine tuberculosis in man must run parrallel with disease in the bovine species. There are three ways of estimating the amount of tubercle in cattle. One is by the examination of samples of milk for the presence of tubercle bacilli; a second is the testing of

cattle by means of tuberculin, and a third is the inspection of carcases at the abattoirs.

It is interesting, therefore, to see to what extent cattle are infected with tuberculosis in the States. As regards the percentage of infected samples of milk, Rosenau[1] gives the following statistics: Chicago (1910), 10.5 per cent; New York (1909), 16 per cent; Washington, 6.72 per cent; Rochester, 5 per cent positive. According to Park (1926) recent investigations as to the percentage of tubercle bacilli in raw milk in New York show that there is no decline:—Certified milk, 100 specimens—no tubercle bacilli found; ordinary milk, 100 specimens —20 specimens contained tubercle bacilli; ordinary milk, 100 specimens after pasteurization—no tubercle bacilli.

The latest statistics[2] regarding tuberculin testing give 3.2 per cent positive reactions in seven million cattle tested in the United States in 1924. This compares with 4.9 per cent reactors obtained amongst 134,143 cattle tested in 1918. I have been unable to obtain abattoir statistics for the United States, but Calmette quotes Schroeder as stating that 20 per cent of the cattle in the States are infected with tuberculosis. There is no mention of the date of this observation.

Taking the Scottish investigations next, we have a group of observations made in Edinburgh and published during the years 1912-16. They were carried out by John Fraser, A. P. Mitchell and C. Y. Wang; almost entirely, in the case of Fraser and Mitchell, on material from the Royal Hospital for Sick Children. The investigations were thus limited as regards district and to a certain extent as regards age and anatomical source. Fraser restricted himself to a study of material from cases of bone and joint tuberculosis, Mitchell to cases of cervical gland disease. Fraser, out of a total of 70 cases, 67 in children under 12 and 3 in adults, found the bovine bacillus in 41 (58.5%). Mitchell, out of a total of 72 cases of tuberculous glands in children, found bovine infection in 65 instances (90%). In 1916, Stanley Griffith tested 18 additional cases of bone and joint tuberculosis from Edinburgh and found only 27.7 per cent due to the bovine bacillus. Wang, on the other hand, obtained material from adults as well as children; indeed his investigation, although more limited in scope, may be compared with those of Park and Krumwiede as regards source. Wang's results deserve more than passing notice as they give some notion of the distribution of bovine tuberculosis amongst the inhabitants of Edinburgh and district at various age periods. He investigated 88 cases in all. Of these, 40 were cases of pulmonary tuberculosis and sputums. The remainder were examples of tuberculosis from various parts of the body with a most careful and painstaking enquiry into the question of age of the various lesions and the portal of entrance. He found that of those over 16 years of age, ten per cent

[1] *The Newer Knowledge of Bacteriology and Immunology, Jordan and Falk, 1928, p. 412.*
[2] *Supp. 57, Public Health Reports, Washington, 1926.*

were bovine infections. Of those under 16 years of age, 55 per cent were due to the bovine bacillus. Of the cases in children in which the portal of entrance was the alimentary tract, 90 per cent were due to bovine infection.

In order to find out to what extent the Edinburgh milk supply was infected with tuberculosis, at the suggestion of the late Professor James Ritchie, I examined in 1913 a series of samples of milk bought haphazard from the shops in the poorer parts of the city. One hundred and one specimens were investigated and sixteen of these were found to contain living tubercle bacilli. This is not much higher than is found in other large cities to the south. An examination of the City Department of Health records in Edinburgh, during the five years period 1920-24, shows that 16,249 cows passed through the abattoirs and of these 7,277, or 44.78 per cent, were shown to be affected with tuberculosis. This result, although much higher than is obtained on this side of the Atlantic, is probably not much greater than is found in other parts of Great Britain. Gofton claims that 40 per cent of all dairy stock in Great Britain are affected with tuberculosis.

It must be admitted that the extraordinarily high percentage of bovine tuberculosis found by Fraser, Mitchell and Wang in Edinburgh is not altogether satisfactorily explained. It may be because, as Sir Harold Stiles has claimed, Scotland is a milk-drinking country. But it would be interesting to have observations made in areas of Scotland other than Midlothian.

Turning to England and Wales, we find an extraordinarily complete series of investigations carried out by Eastwood and T. Griffith and by A. Stanley Griffith. Anyone wishing to read up this subject could not do better than consult this series of papers and particularly the one in the Journal of Pathology and Bacteriology 1919-20, Vol. 23, p. 123, where A. S. Griffith gives an excellent summary of work done by the investigators, who carried out the practical work of the British Royal Commission. One advantage of a series of observations by a small group of workers, much of the work being done by one man, is that uniformity of method exists and the results are therefore comparable amongst themselves.

As regards the results obtained under the heading of the source of material:

	No. examined	*Percentage Bovine*
Sputum	*229*	*1.31*
Genito-urinary	*17*	*17.65*
Cervical glands	*108*	*46.3*
Tuberculous meningitis	*12*	*20.*
Scrofulodermia	*52*	*34.65*
Lupus	*45*	*49.9*

(*Scrofulodermia, a deeper type of skin infection than lupus, usually with lymph gland involvement.*)

As regards bone and joint tuberculosis, in addition to those published prior to 1920, Stanley Griffith has examined a further series of bone and joint cases. Combining these with the former he gets a total of 598 cases with bovine bacilli present in 20 per cent.

When the cases studied by this group of investigators are arranged according to age periods a very striking result is shown. The same result was indeed to be seen in Park and Krumwiede's enquiry,—invariably the younger the individuals the greater the percentage of bovine infection. Taking the cervical gland cases, the results were as follows:

	No. of cases examined	*Percentage of bovine infection*
0– 5 years	*15*	*86.6*
5–10 "	*30*	*63.3*
10–16 "	*24*	*33.3*
16 and upwards	*39*	*25.64*

Wang's figures culled from all the statistics available up to 1914 still further emphasize the difference in the amount of bovine infection at different age periods: 16 years or over, 2.9 per cent; 5 to 16 years, 28.9 per cent; under 5 years, 32.4 per cent.

In addition to the above-mentioned cases, the English observers examined 114 fatal instances of disease in children with 19 bovine infections or 17.54 per cent.

Correlating these results with the amount of tuberculosis amongst cattle in England and Wales, I am able at the moment to give only fragmentary figures as to the prevalence of living tubercle bacilli in the milk supplies of some of the larger cities.

Sheridan Delepine in 1914 reported as follows regarding the milk supply of Manchester over a number of years:

1897–1899	*17.2*	*per cent of samples contained tubercle bacilli*
1900–1904	*10.3*	" " " " "
1905–1909	*6.8*	" " " " "
1910–1913	*9.0*	" " " " "

These statistics correspond fairly well with results obtained in other cities.

Liverpool, 1912	*7.4*	*per cent of samples contained tubercle bacilli*
Birmingham, 1912	*19.6*	" " " " "

Comparing these results with similar ones previously given from the United States and Scotland, one would say that the milks of all large cities on both sides of the Atlantic where pasteurization is not compulsory show very much the same number of infected samples. It varies from year to year and is only an approximate indication of

the amount of tuberculosis amongst the dairy cows. Most of the samples taken represent mixed milk, i.e. the milk of a number of cows mixed together. Thus the milk of one heavily infected animal may contaminate half a dozen samples bought from different small vendors.

The Canadian Situation

Turning lastly to the situation as it exists in Canada, we find a fair amount of information, most of it recently come to hand.

Dr. R. M. Price has been engaged in a study of the types of tubercle bacilli found in the Toronto city hospitals, more especially in the Hospital for Sick Children. In addition she has also studied some cases of tuberculosis in children living in towns and villages elsewhere in Ontario. She states that all the children showing bovine infection came from communities outside Toronto. That is, of course, not surprising as Toronto has been on a system of compulsory pasteurization since 1915.

Up to the present, Dr. Price has studied 194 strains of tubercle bacilli either by cultural or inoculation tests or by both. Of these, 174 strains came from children under 14 years of age and 20 strains from adults. These latter were all of human type.

Of the 174 strains identified from children, 28, recovered from 12 different patients, were of the bovine type. The cases from which these strains were isolated were various:—glandular, joint, renal, peritonitis and generalized infections. Dr. Price's investigations show, to use her own words, "that bovine tuberculosis is a factor in childhood infection in rural districts in Canada and in unpasteurized areas." She puts the amount of bovine infection at 10 per cent (Harris), but it must be remembered that this result is obtained in a somewhat restricted investigation and that the inclusion of a fair number of Toronto cases (cases, that is to say, from a strictly pasteurized area) brings down the percentage somewhat.

Another very interesting paper dealing with the prevalence of tuberculosis amongst the cattle of Canada has recently been published by Cameron. The author's summary of his result is as follows:

"These records show approximately five million cattle slaughtered for food, under inspection, with a tuberculosis infection of just over three per cent.

"Over half a million cattle tested in various areas throughout the country revealed about five per cent with tuberculosis.

"Over half a million cattle tested in individual herds, which are recognized to be most heavily infected, show approximately ten per cent infected with B. tuberculosis (although an average of over 12 per cent reactors have been removed from commencement to 1928 in maintaining these herds clean).

"The infection in these six millions of cattle from all sources all over the Dominion, covering a number of years, averages approximately four per cent. It would, therefore, appear to be justifiable to estimate that bovine tuberculosis infection in Canada at the present time does not exceed five per cent."

The question arises as to how far these results bear upon the question of bovine tuberculosis in man. It is clear that the proportion of tubercle in slaughtered cattle may give little indication of the percentage in dairy herds. The tuberculin tested material includes, according to statement, many dairy herds. At the same time I imagine that it is just the type of dairy herd most likely to show a large proportion of tubercle which would be least likely to be submitted to test. I am inclined to think that were tuberculin testing compulsory everywhere, a considerably lar er percentage than five would be found to react. Dr. Cameron makes the statement: "There is usually a greater amount of infection in dairy herds and in pure-bred herds." He also mentions one area in Quebec with a reacting percentage of 19.8.

We may be fairly certain, I think, that although the situation in Canada is considerably better than it is in Great Britain, it is much the same as in the United States and it is clearly sufficiently serious to warrant our continuing to do certain things:

1. To effectively pasteurize all milk which does not come into the "certified" category.

2. To continue the elimination of tuberculosis from our herds and more especially from our dairy herds.

3. To take precautions to see that the whole matter of our milk supply is under proper supervision, inspection and control.

SUMMARY

The general results of our enquiry may be stated as follows:

1. Tuberculosis is present amongst dairy cattle in all countries where the matter has been investigated. Herds are infected to a greater extent in Great Britain and the continent of Europe than they are in the States and in Canada, but the milk supplies of the large towns do not show any very great differences in this respect.

2. There is a considerable amount of infection with tuberculosis of bovine origin, more marked in certain countries than in others, more marked in the earlier years of life and in certain tissues and organs, more especially glands, bones and joints, with a relative absence of such infection in the pulmonary form of the disease.

3. The amount of this infection is clearly not negligible either from the point of view of interference with health or the fatalities to which it gives rise.

4. Cities such as Toronto, which have a rigid system of pasteur-

ization, appear to be relatively free from infection with strains of bacilli of bovine origin.

5. Finally, while sparing no effort to diminish the amount of air-spread infection, which undoubtedly accounts for the greater portion of disease caused by the tubercle bacillus, let us not forget the cases due to ingestion of the bovine bacillus which it is within our power to elininate altogether.

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Editorials

OUR APPRECIATION

THE year which is now closing has been one of new responsibilities for the Association and particularly for the members of the Editorial Board. Last January, the undertaking by the Association of editing, publishing and financing the former Public Health Journal without a salaried editor and without office staff seemed almost an impossibility. Whatever is the measure of success attendant on the efforts of the past months, one fact stands out clearly, and that is the willingness of our members in the various provinces to accept the burden and to give freely of their time in this effort to provide in Canada a worthy scientific journal in the field of preventive medicine and public health. The brief experience of the Editorial Board has shown that there is an abundance of valuable material embracing the experiences of our Canadian health administrators and practising physicians, and the original investigations of those engaged in special fields of preventive medicine.

The progress in public health and preventive medicine in a country depends not so much upon the occasional individual who can make outstanding contributions, but on the general standard of the whole professional body. A high standard is attained and maintained only by free dissemination of knowledge, either through the printed page or through conferences and these are possible only through representative organizations. The Canadian Medical Association has led the way and established a new medical consciousness in Canada. So, too, our Association has a vital service to render. The hearty support accorded the Association during this year by the Department of National Health, Ottawa, and by the provincial departments of health has been a constant source of encouragement. For the fine support which we have thus received on every hand from individual members and from the various official public health departments, the Editorial Board wishes to express its appreciation.

PUBLIC HEALTH NURSING

RUBY M. SIMPSON, REG.N., AND FLORENCE H. M. EMORY, REG.N.

THE WORK OF A PORT NURSERY

SIBELLA A. BARRINGTON. Reg.N.

CANADA is proud possessor of three Port Nurseries, one at Saint John, New Brunswick, open during the winter season, one at Quebec open during the summer season, one at Halifax open during the entire year. It is the Port of Grey, Saint John, about which I am to tell a story. My wish is that I could take every reader of the JOURNAL to that Red Cross Nursery, early, some cold winter morning, when a big ocean liner has swung into its berth, and a vast crowd of human beings, often representing many nationalities, leave the ship which has for days been their floating home, and set foot for the first time on the new land, all unknown and untried. What their thoughts must be in regard to it all, what hardships they must have gone through, before making up their minds to leave country and friends, and come across the ocean to carve out for their children a new destiny.

Bewildered with it all, no one speaking their language, not knowing just where to go or what to do, they are helpless and alone. Can you picture yourself in a like position, a baby in your arms, several tired children hanging on to your skirts, all your belongings around you done up in baskets and shawls? Do they wonder about the new land? Are their hearts quaking for fear of the great unknown? Looking around, one begins to think of the greatness of this Canada of ours, stretching out her arms in welcome to those of other countries who look for a chance to live and make good.

In the Immigration Building at the Port a room is given over to the work of the Red Cross Society of Canada. It was during war days that the Red Cross of Saint John started the nursery work, assisted by the V.A.D.'s. Like all good things it began in a small way. Like all movements along the health line it has grown and today occupies a very important part in the life of the Port. The same group of women who worked during war days are still carrying on. Early and late, they are there helping and comforting those in need of help. The Red Cross Society also provides food and necessary comforts for incoming settlers who are in need of such help for their journey across Canada. They are sent on their way thanking the Red Cross which has made their arrival in Canada a joy instead of a terror as many of them expected it to be.

Another feature of the Port work in which the reader will be particularly interested, is the health work. When the new comers are brought into the nursery the nurse in charge of that department is ready to render first aid of any kind needed. If a baby or child is ill special care is given to it, as the nursery is provided with every facility for the care of infants and children. Baths are given the babies, clean clothing provided and the mother is given an opportunity to wash and dry

the soiled things. Milk and biscuits are given to the older children, milk to the infants, and to the mothers tea and biscuits. There is a dressing table always ready. Many small wounds are dressed and cared for, treatments of various kinds are given and everything done to speed our new citizens on their way happier and more comfortable in body and mind. This is the first part of a welcome given by the Red Cross but by no means all.

After all this is not the main feature of the Port work that goes all over Canada as a network giving to each and every one who enters our nursery their first lesson in public health work. Every settler who comes into the nursery is given a card addressed on one side to Miss Tremaine (the nurse in charge of all three ports) with the address of the National Office, Toronto. The other side of the card has a space for the Canadian address of the settler, and asks her if she would like the services of a public health nurse when settled in her new home, should one be available. These cards are mailed to the head office and from there are sent to the divisional office in the province in which her home is to be. The divisional office in turn communicates with the nearest branch or some interested individual near by, and with the nearest nursing station, thus giving to that settler the feeling that some one cares; that the Red Cross is still standing as of yore ready with its unfurled banner to render help in need.

At Easter tide the Junior Red Cross sends its Easter bunny, giving to each child an envelope having inside it a handkerchief, and on the outside the Junior verse:—

If you cough, or sneeze, or sniff,
Do it in a handkerchief.

The great influence of the Port Nurseries for the future health and happiness of our settlers is such a real thing that I had better repeat the words of a woman, a returning Canadian who came through the Port of Saint John last winer. "When I first came to Canada, Nurse, I was afraid. It was all so strange to me. The Red Cross Nursery was a real refuge to me that day. Through the card they gave me, I afterwards had the care of a nurse who became my best friend. My babies are both healthy and I have learned from the nurse Canadian habits, also, to love Canada. God bless the Red Cross Nurseries. May they always give out their welcome."

A Survey of Nursing Education in Canada

A survey of nursing education in Canada sponsored conjointly by the Canadian Medical Association and the Canadian Nurses' Association, is under way. Dr. George Weir, professor of Education of the University of British Columbia, appointed to direct the survey has commenced the study which has three general objectives.

1. To assist tthe nursing porfession by crystallizing its problems and by defining and elevating its status.

2. To render more effective assistance to the medical profession in its great service to suffering humanity.

3. To promote the interests and well-being of the patient and of the public.

On behalf of the joint committtee immediately responsible for the study and in the highest interests of our profession, we bespeak the loyal and spontaneous support of the public health nursing group in the securing of data or in the rendering of other assistance which they may be called upon to give.

EPIDEMIOLOGY AND VITAL STATISTICS

F. W. Jackson, M.D., D.P.H., and Neil E. McKinnon, M.B.

ORGANIC HEART DISEASE AS A CAUSE OF DEATH

ORGANIC heart disease as a cause of death has held first place for some years, since, in fact, it displaced tuberculosis from that position. The rate from heart disease is still steadily increasing. Attention has been drawn repeatedly by those interested in the field of vital statistics to this apparently unenviable state of affairs. That the situation at present may be more encouraging than is generally recognized, is indicated in the Statistical Bulletin of the Metropolitan Life Insurance Company for June, 1929. Here it is pointed out that in order to get a true measure of the situation, the crude death rate must be analysed and the specific rates for age groups calculated. By so treating the data obtained from the industrial policy holders of this company, during the years 1911 to 1928, it is shown that all ages up to 45 in males and up to 65 in females have had decreasing death rates. It is pointed out that in the age groups over 40, there are many in whom death has been postponed by the reduction in death rates in the earlier age groups, not in heart disease alone, but also in tuberculosis, diphtheria, scarlet fever, typhoid fever, etc., and such individuals, living beyond the younger age limit, increase the number in the older age groups which make up the large part of the deaths from heart disease. In discussing the findings of this analysis, the publication explains the decrease as follows: "To our mind, the decline in the cardiac disease death rate among children will be found, on analysis, to be very largely a reflex of the great strides that have been made in the control of diphtheria and scarlet fever, of the increasingly intelligent care that is being given to children who have had infectious diseases, of the earlier diagnosis of rheumatism, of the increase in tonsillectomies and of improved dental hygiene."

The age-specific death rates of heart disease for Ontario, 1918-1927 inclusive, show a slight but irregular tendency in the same direction. This is most marked in the 0-4 years age group in which the average annual rate for the five years 1918-1922 was 11.9, and that for the years 1923-1927 was 7.4, a decline of over 35 per cent. In the 5-9 age group the difference between the averages for the two five year periods is much less, from 10.6 to 10.1, a decline of about 5 per cent. The 10-14 age group shows but very little difference in the two periods, while in the 15-19 age group, the rate for the latter five years is greater than for the first. It is to be hoped that further data for the general population over a greater number of years will show results more in keeping with findings of the Metropolitan Life Insurance Company. It may be, however, that the findings of the industrial insurance policy holders are not strictly applicable to the general population, but are true only for a selected group. The tuberculosis death rate

among the industrial policy holders of the same company in the years 1911-1920, although much higher in 1911 than the general rate, fell much faster than the rate in the general population. The same may be true of the heart disease rate. Analysis of other and more extensive data will undoubtedly be stimulated by the findings of this insurance company.

ONTARIO*

Deaths—Heart Disease†

Year	*Specific Age Rates per* 100,000 *population*							
	0-4	5-9	10-14	15-19	20-29	30-39	40-49	50-
1918	96	11.8	17.1	22.4	31.9	50.2	89.6	564.0
1919	15.3	11.2	14.9	18.7	24.7	37.2	73.1	498.0
1920	10.7	8.3	16.9	16.9	27.0	39.3	70.8	559.4
1921	13.6	10.1	16.0	19.3	22.0	37.9	60.3	525.6
1922	10.5	11.8	16.7	15.0	20.8	35.7	60.2	580.0
1923	8.3	12.9	16.1	16.4	19.8	34.1	82.5	677.2
1924	9.8	9.9	17.4	18.4	21.0	33.8	82.4	633.0
1925	5.6	11.0	14.0	23.0	17.8	34.9	75.3	672.5
1926	7.4	8.1	17.5	18.3	18.9	29.6	80.5	790.0
1927	5.8	8.7	13.6	18.0	17.9	36.9	85.9	802.4

**Data supplied by the Department of Epidemiology and Biometrics, School of Hygiene, University of Toronto.*

†Pericarditis, Endocarditis and mycocarditis (acute), Angina Pectoris, Other Diseases of the Heart.

REPORTED CASES OF CERTAIN COMMUNICABLE DISEASES IN CANADA* BY PROVINCES—OCTOBER, 1929

Disease	P.E.I.	Nova Scotia	New Bruns	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
Diphtheria	4	11	34	281	369	102	25	40	76
Scarlet Fever	—	81	68	379	333	58	54	117	37
Measles	—	12	2	285	399	59	20	3	380
Whooping Cough	—	3	1	280	188	84	105	74	37
German Measles	—	3	—	12	4	†	3	1	—
Mumps	—	—	1	102	94	69	25	10	175
Smallpox	—	—	—	29	9	3	32	5	17
Cerebrospinal Meningitis	—	1	—	10	11	—	—	—	1
Anterior Poliomyelitis	—	—	1	7	105	11	18	8	5
Typhoid Fever	3	10	28	54	77	15	5	13	5

*Data furnished by the Dominion Bureau of Statistics, Ottawa.
†Not reportable.

NEWS AND COMMENTS

P. A. T. SNEATH, M.D., D.P.H.

Sedgwick Medal Awarded to Dr. Chapin

The Editorial Board regret that the publication of the announcement of the Sedgwick Memorial Medal was delayed till last month. The American Public Health Association has kindly pointed out to us the fact that the award was made by the committee at the Minneapolis meeting, Dr. C. V. Chapin, Medical Officer of Health for Providence, R.I., having been elected. No Canadian nominations were received and for this neglect the Board feels to some extent responsible. The Board extends heartiest congratulations to Dr. Chapin on being thus honoured with this well-merited award.

Royal Canadian College of Physicians and Surgeons

THE organization of the Royal Canadian College of Physicians and Surgeons, incorporated by an Act of Parliament at the last session, was completed November 19th and 20th. The original membership will consist of 74 deans and professors of the medical faculties of the various provincial universities and of McGill University, Queen's University, and the University of Western Ontario. Membership thereafter will doubtless be conferred by examination.

Old Age Pensions Board

THE Interprovincial Old Age Pensions Board has now had its membership enlarged by Order-in-Council to include representatives of Alberta and Ontario. The duties of this Board are to interpret and recommend changes in the Act. The following now constitute the Interprovincial Board: Dr. D. Jamieson, chairman of the Ontario Old Age Pensions Commission; Alex Ross, chairman of the Alberta Old Age Pensions Board; F. J. Reynolds, Commissioner of Pensions in Saskatchewan; Major C. K. Newcombe of the Manitoba Old Age Pensions Board; E. S. H. Winn, chairman of the Workmen's Compensation Board of British Columbia, and J. E. O'Neill, solicitor of the Dominion Department of Labour.

Canadian Social Hygiene Sunday Evening Meetings

As this issue goes to press, three public Sunday evening meetings have been held by the Toronto Social Hygiene Council, in accordance with its winter programme.

Dr. Thomas S. Cullen, formerly of Toronto, now President of the Maryland State Board of Health and Professor of Gynaecology at Johns Hopkins University, delivered the opening address, on cancer, to a large audience, whose appreciation of the address was clearly evident in the fact that scarcely anyone left the hall during a forty-five minute period of questions and answers following the address.

Dr. Cullen stressed the value of public education as a means of preventing cancer, and, more especially of detecting it in early stages. He stated that the percentage of cures in cancer

cases is steadily increasing, due largely to the fact that the public is becoming educated to the importance of promptly consulting a doctor when any lump or other possibly cancerous condition manifests itself. He emphasized the importance of the regular periodic health examination as a means of discovering early symptoms of cancer.

Dr. William Deadman, Director of Laboratories, Hamilton, Ontario, gave an excellent and comprehensive address on the subject, "Bacteria, Useful and Harmful." Bacteriology is one branch of medical science about which the average layman is especially uninformed, and, in the main, uninterested. Dr. Deadman, however, held the attention of his hearers, giving an authentic but at the same time popular address upon this difficult topic.

Canadian Council on Child Welfare

THE tenth Annual Meeting of the Canadian Council on Child Welfare was held at the Chateau Laurier in Ottawa, November 25th and 26th. One of the outstanding features on the agenda was the proposal submitted by the committee of the "Special Conference on Social Work," that the Canadian Council on Child Welfare expand its venue and as such change its name to the Canadian Council on Child and Family Welfare.

Conference of Medical Services

THE third Annual Conference of the Medical Services in Canada, arranged by the Canadian Medical Association, met in the House of Commons at Ottawa, November 21st and 22nd, under the patronage of the Hon. Dr. James H. King, Minister of Pensions and National Health. Representatives of the medical profession of Canada were in attendance. The programme included the following speakers: Hon. Dr. King; Dr. J. A. Amyot, C.M.G., Deputy Minister of Pensions and National Health; Dr. A. T. Bazin, President of the Canadian Medical Association; Hon. Dr. H. E. Young, Provincial Health Officer, British Columbia; Dr. M. R. Bow, Deputy Minister of Health, Alberta; Dr. George G. Melvin, Chief Medical Officer of New Brunswick; Dr. P. A. Creelman, Medical Officer of Health, Charlottetown, Prince Edward Island; and Dr. George A. Ramsay, London, Ontario.

Dominion Council of Health

The Dominion Council of Health met in Ottawa November 18th, 19th, and 20th.

The following attended the meeeting: Dr. J. A. Amyot, Deputy Minister of Health, Ottawa; Dr. H. E. Young, Victoria, B.C.; Dr. M. R. Bow, Edmonton; Dr. W. J. Bell, Toronto; Dr. A. Lessard, Quebec; Dr. Creelman, Charlottetown, P.E.I.; Dr. William Warwick, St. John, N.B.; Dr. MacIntosh, Halifax, N.S.; Dr. J. G. FitzGerald, Toronto; Madame Tessier, Quebec; Mr. Bert Merson Toronto.

Nova Scotia

DR. G. H. MURPHY of Halifax was sworn in as a member of the Cabinet of the Rhodes Government to fill the vacancy created by the death of the Hon. John Mahoney, late Minister of the Department of Natural

Resources under which the Department of Health functions.

New Brunswick

ADDITIONAL diphtheria immunization clinics have been established by the Provincial Department of Health at Gagetown and Jemseg.

Quebec

OUR provincial correspondent notes that of the thirteen candidates for the Diploma in Public Health at the School of Hygiene in Toronto, seven are from the province of Quebec. Two, Drs. A. P. Savoie and G. Choquette, are from the Lake St. John County Health Unit and the St. Hyacinthe Unit, respectively. The other physicians will relieve some of the county health officers who in turn will spend the requisite period in academic training, since it is now the policy of the Provincial Bureau of Health to have all their county health officers proceed to some public health qualification after one or two years of field training.

Arrangements have now been made to have an annual dinner for each county health unit, to which will be invited the Director of the Bureau of Health, the staff of the respective units, all curés and clergymen whose parishes are within the limits of the particular county health unit, as well as the heads of municipalities and physicians of the same areas. The purpose of these dinners is to permit the medical officer of each unit to give a report on the past year's accomplishment and to outline and discuss plans for future endeavour with those who have a decided interest in the work.

As a sequel to the recommendations offered as a result of the Montreal Health Survey, a by-law has been passed by the city of Montreal creating a Board of Health. The function of the Board is strictly advisory, to submit to the Executive Committee recommendations and suggestions on matters pertaining to public health and hygiene. The membership of the Board is to consist of nine—two each appointed by the Universities of McGill and Montreal, five appointed by the civic authorities, three of whom will be aldermen, the director of the Department of Health and the chairman of the city executive. The members of the Board are to hold office until the appointment of successors and are to be entitled to a stated honorarium for attendance at the meetings of the Board of Health.

The Child Hygiene Section of the Department of Health of the City of Montreal has a staff of 27 physicians, 25 of whom are engaged full-time, and 80 nurses, of whom 70 are on a full-time basis. The scope of this section includes school medical inspection, baby clinics, pre-natal and pre-school work, control of infant mortality, contagious diseases amongst children, and supervision of children's boarding homes.

The administrative committee of the municipality of Quebec has decided to add an annex to the Civic Hospital at an estimated cost of $150,000.

Ontario

ON November 6th, Mayor Ellis of Ottawa turned the first sod for the new municipal filtration plant.

Some 200 persons were present at the ceremony which was followed by a luncheon held in the temporary filtration building. The treatment of Ottawa River water which supplies the city of Ottawa, has offered several complications. In addition to filtration and chlorination, it will be necessary to subject the water to a decolorization process. Several interesting features in connection with the treatment of this brownish coloured river water were revealed as the work proceeded in an experimental plant erected about a year ago under the guidance of Dr. George Nasmith of Gore, Nasmith and Storrie, consulting engineers, of Toronto. The construction of this plant will take about 18 months.

The Management Committee of the Board of Education of Toronto has approved of the scheme for the medical examination of secondary school pupils. This scheme was prepared by Lieut.-Colonel William C. Michell, supervising principal of high schools, who stated that he had the co-operation of the medical officer of health. It is considered that this will require the services of two physicians and two nurses. In approving the scheme, the committee are forwarding a recommendation to the Board that provision be made in the 1930 estimates to provide for this service.

It is proposed that examination of pupils be carried out during the regular physical training periods. The following features are recommended in the proposals forwarded to the Board:

(a) The A.D.P. cards of pupils entering the secondary schools from the local public schools will be forwarded and subject to examination.

(b) Pupils enrolling from outside schools will be required to have a physical examination made by the school physician.

(c) All pupils will be subject to physical examination where special indications warrant such. Immediate attention will be given where evidences of a physical breakdown are noted.

(d) Communicable diseases will be subject to control.

(e) General instruction in personal hygiene will be given.

(f) Physical examination will be made of entrants into competitive athletics.

(g) Postural and functional defects will be subject to such correction as may be obtained from especially supervised physical training.

(h) All pupils will be subject to a final physical examination on leaving school with the idea in particular of affording advice on the selection of a vocation suited to the particular physical status of the individual.

The Toronto Mothers' Allowance Board consists of six members, two appointed by the municipality and the remainder by the provincial government, to act without remuneration. Miss Jane Barclay, the secretary, and Brigadier William H. Byers, represent the city, and Mrs. A. D. Fisher, the Reverend F. E. Powell, Mrs. James Litser, and Miss M. Foy represent the provincial authorities. Mrs. A. D. Fisher was elected chairman at the last annual meeting, filling the vacancy created by the death of the late Miss Gertrude Lawlor, LL.D.

Investigational work is carried out by provincial workers, but reports and applications are as a matter of convenience filed at the offices of the Toronto board and registered with the social service exchange; copies of these are forwarded to the central board. However, the function of the local Toronto board is to be responsible for decisions relative to the granting or refusal of benefits to Toronto applicants only.

THE Hon. Dr. David Jamieson and J. A. Ellis, Esq., a member of

the Ontario Railway and Municipal Board, have been appointed members of the Ontario Old Age Pension Commission by an Order-in-Council dated November 6th, upon the recommendation of the Hon. Dr. Forbes Godfrey, Minister of Health and Labour. Dr. Jamieson, who is chairman of the Mothers' Allowance Commission, has been named chairman of the Commission. This latter will consist of the two gentlemen noted, and the administrative work will be carried out by the staff already engaged in the central administration of the Mothers' Allowance Commission.

Dr. Thomas S. Cullen of Baltimore, President of the Maryland State Board of Health, spoke on the subject of "Cancer" under the aegis of the Toronto Social Hygiene Council at Hygeia House, November 17th.

Dr. C. H. Best, Professor of Physiology in the University of Toronto, spoke to the Toronto branch of the League of Nations Society in Canada on "The League and Medical Scientific Research."

At the second meeting of the recently formed Community Healtth Association of Greater Toronto, Professor John Line of the University of Toronto, spoke on "Personality Development." Miss Muriel McKay, president of the Association, was chairman, and reports were presented by the Misses Mann, Helen Heffernan, Isabel McEwan, Larkin and Alice Thompson.

Manitoba

DR. T. A. PINCOCK, Deputy Minister of Health and Public Welfare, has been investigating certain public health activities in Ontario and Quebec, in the latter of which his interests have been largely directed towards the application of the Public Charities Act.

Alberta

THE municipal hospitals in this province are proving to be of inestimable value to the populace; so much so that in various instances it has become necessary to augment the bed accommodation. Recently the hospital at Daysland, which had been closed for some time on account of the opening of the large hospital at Camrose, was re-opened and is being enlarged to provide 50 beds. Further, the hospital at Hanna, which was first opened in 1921 accommodating 22 patients, has been enlarged to provide facilities for 54 in-patients. The new addition was recently opened by the Minister of Health, the Hon. George Hoadly, accompanied by Dr. M. R. Bow, the Deputy Minister.

The Council of the College of Physicians and Surgeons of Alberta have recorded their approval of the inauguration of a system of health inspection for rural school districts in co-operation with the local rural school authorities, which work has legislative sanction. It, therefore, remains for the rural school authorities to arrange with their local medical authorities for the institution of this very important public health service.

The Council of the College has decided not to alter the existing reciprocal registration arrangements with the General Medical Council of Great Britain.

The water supply of Calgary has occasioned considerable dissatisfaction as a result of which steps have been taken to have a survey made of the situation. It is proposed to approach the Dominion Government in respect to the construction of an adequate reservoir in the Dominion Forest Reserve and the permanent sanction for a properly protected catchment area supplying such a reservoir. The present water supply is drawn from the Bow River not far from the city. The Calgary Medical Society some weeks ago held a special meeting dealing with this problem and presented a resolution endorsing the activities of the mayor and city council in the project.

OBITUARY

Dr. Frederick Montizambert, C.M.G., I.S.O., M.D., F.R.C.S.E., D.C.L.

THE long career of a distinguished public servant ended on the 2nd *instant* in the death at Ottawa in his 87th year, of Frederick Montizambert.

For upwards of half a century (1865-1920) previous to the formation of the Department of Health at Ottawa, the public health work of Canada was carried on almost single-handed by the Director-General. Under his direction the quarantine and Marine Hospital services and laboratories of both coasts and at Grosse Ile in the St. Lawrence were developed. The fine commanding figure of this courtly gentleman, towering head and shoulders above his fellows, has been conspicuous at the public health gatherings of North America since their earliest days. He had been president of both the American and Canadian Public Health Associations, and to his energy and ability much of the public health progress on this continent must be ascribed.

The younger generation of public health men owe much to the fine public spirit, the wise counsel and the friendship of Dr. Montizambert. His is a notable example of the public servant seen all over the British Empire, whose greatest regard is commonly to be found, at the end of his career, in a sense of duty well done.

The writer wishes to acknowledge his personal loss of a fine friend and wise counsellor and to add this token of respect to the memory of one of Nature's gentlemen.

When we met in Ottawa it was Dr. Montizambert's custom to invite the writer to luncheon, after which, and a smoke, he would stretch his long legs and say: "Well, this inconsiderate government expects us to work between meals."

Present at the birth of the public health work of Canada, Dr. Montizambert witnessed the ravages of typhus, of which he himself was a victim, and of cholera among the early immigrants. He saw the evolution of the work of preventive medicine, from the mists of empiricism to the scientific atmosphere of the present; he observed the advance of curative medicine and surgery from a similar empiricism to their erection on a scientific basis. But what one best remembers are his kindly qualities, his genial smile, his fervent handgrasp, and his "God bless you, my dear boy!"

John W. S. McCullough

BOOK REVIEWS

D. T. FRASER, B.A., M.B., D.P.H. and R. R. MCCLENAHAN, B.A., M.B., D.P.H.

Preventive Medicine and Public Health, Vol. I, II, Nelson Loose-Leaf System, 1928 — *Thomas Nelson & Sons. Pp.* 560 (*Vol. I*), *pp.* 427 (*Vol. II*). *Price* $20.00.

In the introductory note to this volume, one finds these arresting words: "This volume is the mental creation of Sir William Osler. In the last year of his life, after a truly international career, he declared that the future of medical practice lay in the preservation of health—thc prevention of disease. With this in mind, and with the welfare of humanity at heart, he outlined the plan of this volume and suggested a number of the contributors. Just before his death he promised to write the introduction. What he would have written each reader must now picture for himself."

Whatever contributors were suggested by Osler, the fact is that the publishers have succeeded in selecting those pre-eminently suited both by virtue of their reputation and ability for the task of writing the various chapters. Without discriminating in any degree, one may mention the names of Haven Emerson, E. V. McCollum, Theobald Smith, Hans Zinsser, W. H. Frost, John W. Ballantyne, B. P. Watson, Sir Robert Philip, Adolpho Lutz. Both England and the Americas are represented. Associated with the editor-in-chief, Haven Emerson, are Frederick B. Flinn, Frank G. Pedley, Earle B. Phelps and Alton S. Pope.

Volume I contains sixteen chapters covering in the main all phases of preventive medicine. In point of actual pages contributed upon one subject, that of Prevention of Communicable Diseases is first, then in sequence, Industrial Medicine, Prevention of Venereal Disease, Malaria, Tuberculosis, Child Welfare, the Relation of Animals to Human Disease. To each of the remaining topics approximately fifteen pages are devoted. The text is well illustrated with graphs and cuts of photographs. Volume II is devoted to Public Health. The same high standard of contributors is maintained as in Volume I. Among the subjects dealt with are School Hygiene, Public Health Nursing, Public Health Laboratories, Epidemiology, Vital Statistics, Military Medicine, and Sanitary Science. The publishers agree to keep the volume up to date with new material, supplied at such times as may seem expedient and at a minimum cost.

Together these two volumes comprise a modern, authoritative work, setting forth the problems of Preventive Medicine and Public Health: the way these problems are being met; and what has already been accomplished. These volumes one may unhesitatingly recommend for the general practitioner. They are indispensable adjuncts to every medical library and should be found in every department of health.

D. T. Fraser

CURRENT HEALTH LITERATURE

D. T. FRASER, B.A., M.B., D.P.H.

Do Mothers Transmit Immunity to Their Children?—*Knowlton, J. Prev. Med. Vol.* 3, *No.* 5, 1929.

Cases of each of fifteen communicable diseases in infants under one year of age in Connecticut have been tabulated by monthly age groups to ascertain, if possible, the duration of "inherited immunity." Upon these data the following observations were made:

"1. A few more cases were reported for the first month of life than for the second month. This difference is particularly conspicuous in lobar pneumonia.

2. Approximately one-third of the cases (31.2 per cent) occurred during the first half of the first year, and two-thirds (68.8 per cent) during the second half.

3. Except for the tendency to give ages in round numbers, such as six months and one year, the general trend of communicable disease incidence is upward during the first year of life.

4. The most striking increase in number of cases reported occurs between the second and third months, the cases reported for the third month being three times those reported for the second month (i.e., an increase of 200 per cent)."

Theoretically a mother may transmit antibodies to a child through the placenta before birth or through milk after birth. No increase in susceptibility is indicated at weaning time.. The increased incidence of disease in the third month may possibly be correlated with the elimination of maternally transmitted antibodies. Other explanations for the relative immunity of infants may be explained by "reaction inertia" and that infants are less exposed to infection. The highest incidence for infectious diseases for all ages is six years. The author concludes: "In view of the data submitted the question in the title of this paper may be repeated: *Do mothers transmit immunity to their children?*

Incidence of Typhoid Carriers in a General Population Group—*Bromberg and Comaroff. J. Hygiene, Vol.* 29, *No.* 2, 1929.

It is very evident that the successful control of typhoid fever in a community will depend in some measure on the control of carriers. An attempt was made to determine the best medium for plating samples, the most suitable solution for shipping them, and a satisfactory rapid method for the identification of suspected colonies. For the diagnostic laboratory the findings are of importance. For platings MacConkey's bile salt medium without and with brilliant green proved most satisfactory. Brilliant green glycerine solution was chosen as collecting fluid. Kligler's lead acetate triple sugar medium was used for presumptive differentiation of single colony cultures. Final identification was carried out by agglutination and carbohydrate reactions. In this manner complete identification was possible in about 48 hours. The specimens were taken from 484 inhabitants of whom three proved to be carriers—0.62 per cent. Of the three carriers, all women, one gave a history of typhoid 30 years ago; one had the disease in 1926; the third gave no history of typhoid.

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D = Department. E = Editorial.

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